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FOURTH

Analysis

OF

CASES OF TETANUS TREATED IN HOME MILITARY HOSPITALS

DURING PART OF OCTOBER, NOVEMBER, AND PART OF DECEMBER, 1916.

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THREE analyses of cases of tetanus treated in home hospitals have been published in THE LANCET—one on Oct. 23rd, 1915, the second on Dec. 2nd, 1916, and the third on June 30th, 1917.

In the third analysis it was stated that the intention was to publish each series of 100 cases as they occurred, and the present paper deals with the first 100 cases completed since the last analysis was written. The number of cases of tetanus dealt with in the four periods and the rate of mortality are given in Table I. :—

TABLE I.

Analyses.	No. of cases.	Recovered.	Died.	Mortality per cent.
1914–15.	231	98	133	57·7
1915–16.	195	99	96	49·2
Aug.–Oct., 1916.	200	127	73	36·5
Oct.–Dec., 1916.	100	69	31	31·0

It is satisfactory to see that the rate of mortality is steadily going down.

THE DISTRIBUTION OF CASES OF TETANUS FROM AUGUST, 1914, TO DECEMBER, 1916.

Diagram 1 merely represents the number of cases of tetanus which have been treated in home military hospitals since the beginning of the war. They are taken from the date of the wound, not from the date of onset of the disease. For example, in August, 1914, there were five men wounded who sooner or later developed tetanus. The figures have no relation to the number of wounded or the number of troops engaged. It shows periods of activity and inactivity in the fighting line.

Diagram 2 represents the number of cases of tetanus which have been treated in home military hospitals since the beginning of the war. They are taken from the date of the onset of the disease. For example, in August, 1914, there were two wounded men in England who had been attacked by tetanus.

THE NUMBER OF CASES OF TETANUS OCCURRING AMONG WOUNDED SOLDIERS.

Diagram 3 represents the ratio of cases of tetanus to the number of wounded soldiers treated in home military hospitals from August, 1914, to December, 1916. It will be seen that the ratio in September, 1914, is about six times as high as in November, 1914, and that it remains at the lower level until the end of 1916. This fall in the ratio is undoubtedly to a great extent due to the introduction of prophylactic injections of antitetanic serum, which took place about the middle of October.

RELATION OF THE NUMBER OF DAYS WHICH ELAPSED BETWEEN THE DATE OF WOUND AND THE ONSET OF SYMPTOMS AND THE RATE OF MORTALITY.

Diagram 4 shows that in the 100 cases dealt with, if the symptoms of tetanus appeared within 10 days of receiving the wound, the mortality was 83·3 per cent. ; if between the eleventh and twenty-fourth day, 29·6 per cent. The remaining 57 cases with an incubation period of from 25 to 190 days, 16 per cent. The shorter the incubation period the greater the rate of mortality ; the longer the incubation period the smaller the rate of mortality.

DIAGRAM 1.

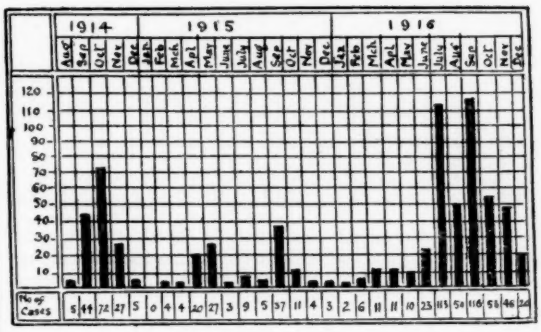


DIAGRAM 2.

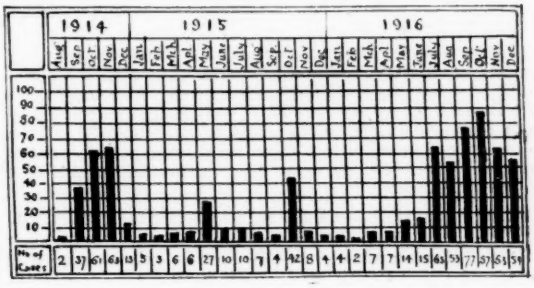


DIAGRAM 3.

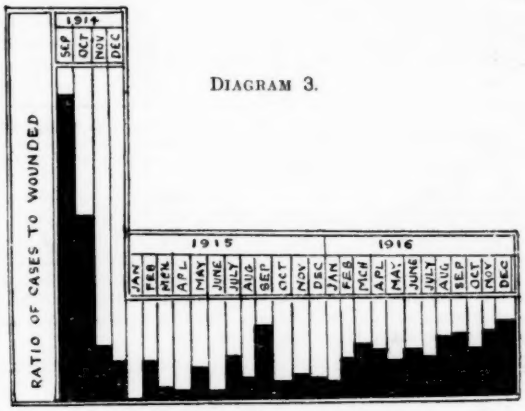
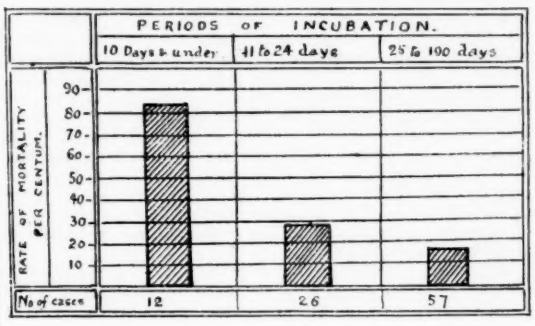
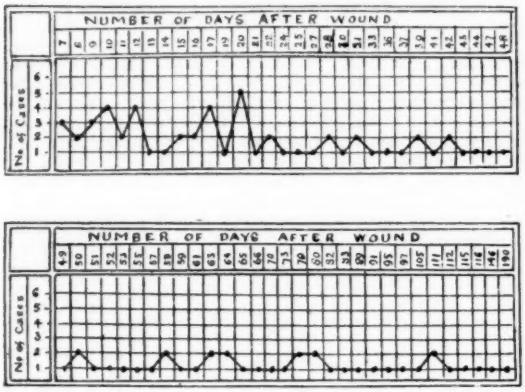

RATIO OF CASES TO WOUNDED
1914
SEP OCT NOV DEC
1915
1916
JAN FEB MCH APL MAY JUNE JULY AUG SEP OCT NOV DEC JAN FEB MCH APL MAY JUNE JULY AUG SEP OCT NOV DEC

DIAGRAM 4.



THE INCUBATION PERIOD, OR NUMBER OF DAYS WHICH ELAPSE BETWEEN THE DATE OF WOUND AND THE ONSET OF TETANUS SYMPTOMS.

CURVE A.



Curve A shows the number of cases which occurred on each day after the date of the wound. The shortest period of incubation was seven days, the longest 190. Only 95 out of the 100 cases are recorded, the incubation period in the remaining 5 not being given in their reports. There were only 12 cases with a short incubation period—that is, up to 10 days, and 60 cases with an incubation period of more than 22 days.

THE VARIATION IN THE PERIOD OF INCUBATION SINCE THE BEGINNING OF THE WAR.

The following table gives the number, in percentages, of cases of tetanus with short, medium, and long incubation periods which have occurred since the beginning of the war. From it will be seen that in the first year there were 47 per cent. of cases with a short incubation, whereas in the last analysis this has fallen to 12·6 per cent. In 1914–15 there were only 6·4 per cent. of cases with a long incubation period; this rose at the end of 1916 to 61·1 per cent.

TABLE II.—*Incubation Periods.*

Analyses.	Up to 10 days, per cent.	11 to 22 days, per cent.	More than 22 days, per cent.
1914–15.	47·0	46·4	6·4
1915–16.	15·5	48·8	35·6
Aug. to Oct., 1916.	14·0	43·8	42·1
Oct. to Dec., 1916.	12·6	26·3	61·1

This is a measure of the action of the prophylactic inoculation of antitoxin. During the first year of the war many of the wounded did not receive this, hence the number of acute cases with a short incubation.

THE PROPORTION OF CASES OF LOCAL TETANUS TO GENERAL TETANUS.

It is by no means easy in many cases to decide whether a case is one of generalised or localised tetanus. By generalised tetanus is meant the occurrence of spasticity or rigidity in muscles distant from the site of wound. Trismus is the most common initial symptom in general tetanus.

In local tetanus the spasticity or rigidity is confined to the muscles in the neighbourhood of the wound. In a case of this kind arising, for example, from a wound of the right leg the toxin may be pictured as passing up the nerves and affecting the motor cells of the cord which regulate the nervous supply to the muscles of the wounded leg. In these cases the toxin does not appear to proceed farther up the cord or to be capable of spreading by the blood stream. Hence the symptoms of twitching, spasm, or rigidity are confined to the wounded limb. Local tetanus may be looked upon as a much modified variety of the original disease, or even as a new type, due to the action of the prophylactic injection of antitoxin.

In general tetanus, on the other hand, the toxin molecules may be pictured as gaining entrance to the circulation and so reaching all parts of the nervous system. In this case trismus is frequently the first symptom either on account of some selective quality towards the toxin inherent in the fifth nerve or on account of the shortness of the nervous route between the masseter muscles and the central nervous system.

On examining the 100 cases under consideration it was found that 61 could be placed in the general and 28 in the local group; in 11 it was doubtful to which group they belonged or if the cause of death was tetanus. In the 61 cases of generalised tetanus there were 40 recoveries and 21 deaths, a mortality of 34·4 per cent. All the cases of localised tetanus recovered. The symptom of trismus is recorded in 54 out of the 61 cases, opisthotonos in 17. The following table gives this in tabular form:—

TABLE III.

Cases.	Type of tetanus.	Recovered.	Died.	Mortality, per cent.
61	General.	40	21	34·4
28	Local.	28	0	0·0
11	Doubtful.	1	10	91·0

THE POSITION OF THE WOUNDS IN REFERENCE TO THE MORTALITY.

TABLE IV.

Position of wounds.	No. of cases.	Recovered.	Died.	Mortality, per cent.
Body	38	24	14	36·8
Limbs	62	45	17	27·4

Among these were nine cases of trench feet, seven of whom died. Also a case following appendicitis and one following an operation for hæmorrhoids.

THE EFFECT OF FRACTURES ON THE RATE OF MORTALITY IN CASES OF TETANUS.

TABLE V.

Wound.	No. of cases.	Recovered.	Died.	Mortality, per cent.
Fractures ...	35	31	4	11·4
No fracture ...	65	38	27	41·5

In the previous, or third, analysis the percentage of wounds with fracture of one or more bones was 36, with a rate of mortality of 30·1 per cent. It is difficult to understand why this fall in the rate of mortality to 11·4 per cent. has taken place.

TETANUS OCCURRING AFTER OPERATIVE INTERFERENCE WITH THE WOUND.

TABLE VI.

No. of case.	Date of wound.	Date of operation.	Date of tetanus.	Days after wound.	Days after operation.	Nature of wound.	Nature of operation.	Recovered.	Died.
	1916.	1916.	1916.						
537	12–8	30–10	9–11	89	10	Fract. r thigh.	Amputation.		D
550	28–8	3–11	10–11	82	7	Fract. l. thigh, leg, & l. elbow.	Passive movement of elbow.	R	—
611	14–11	23–11	25–11	11	2	Wound of calf.	Vein ligatured.	—	D
620	7–11	22–11	23–11	15	1	Behind l. ear and elbow.	Removal of bullet near 2nd cerv. vertebra.	—	D
647	12–10	25–10	8–11	27	14	R. leg & foot.	Re-amputation.	R	—
656	6–10	17–10	23–10	17	6	R. arm & hand.	Removal of metal from thumb.	R	—
631	28–9	15–11	22–11	55	7	Back, l. leg and knee.	Swelling opened in r. flank.	—	D
663	18–8	?	7–12	111	?	Fracture, both thighs, scrotum & forearm	Fell against bed on old injury; wounds healed.	—	D
669	18–9	14–10	31–10	43	17	R. scapula, 2 wounds l. arm	Shrapnel removed from shoulder.	R	—
672	28–9	7–12	10–12	73	3	Foot and ankle.	Shrapnel removed from ankle.	R	—
673	?–3	5–10	8–10	over 190	3	Thigh.	4 pieces of metal removed.	—	D
674	5–11	24–11	25–11	20	1	R. buttock.	Shrapnel removed.	R	—
698	5–10	7–11	20–11	44	13	Fract. l. leg.	Amputation.	R	—
737	9–8	17–11	29–11	112	12	R. thigh.	Metal removed.	R	—
751	13–11	28–11	29–11	16	1	R. heel.	Pieces of sock and boot removed.	R	—

Table VI. gives the cases, 15 in all, in which tetanus is reported to have followed on an operation. There were 6 deaths, a mortality of 40 per cent. In only 2 of these cases was a prophylactic inoculation given before the operation. The Tetanus Committee advise that when operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum should invariably be given.

On Operative Interference after Tetanus Symptoms have Appeared.

Table VII.

No. of case.	Date of tetanus.	Date of operation.	Days after onset.	Nature of wound.	Nature of operation.	Recovered.
651	15-9-16	16-9-16	1	Fract. face and l. arm.	Bone from arm and jaw removed.	R.
682	4-12-16	8-12-16	4	Fracture of humerus.	Sequestrum removed.	R.

Table VII. gives the cases, 2 in all, in which an operation was carried out on the wound after the appearance of symptoms of tetanus. There were two recoveries. Since the beginning of the war 52 cases of this kind have been reported, with a mortality of 40 per cent.

The opinion of the Tetanus Committee is that it appears to be safer to abstain from surgical interference with the wound until the ordinary treatment for tetanus has been carried out, unless there exist other and imperative reasons for immediate operation. When the symptoms of tetanus have subsided, and the tissues are flooded with antitoxin, then the wound can be opened up and searched for foreign bodies or hidden collections of pus and tetanus bacilli.

Treatment of Tetanus by Antitetanic Serum.

A. *Prophylactic or Preventive Treatment.*

Among the 100 cases 61 are noted as having received a prophylactic injection of antitetanic serum in France. Ten cases are reported to have received secondary prophylactic injections in home hospitals. It is evident that the recommendations of the Tetanus Committee regarding these secondary injections were only beginning to bear a promise of fruit at the end of 1916. Of these 61 cases 51 recovered and 10 died, giving a mortality of 16·4 per cent. Of the remaining 39 cases there is no record of prophylactic treatment in 22, although in all probability many of them received it. Of these 22, 12 recovered and 10 died—a mortality of 40·5 per cent. The remaining 17 cases are stated to have had no prophylactic injection of any kind. Of these, 6 recovered and 11 died—a mortality of 64·7 per cent. This may be represented shortly in the following table, which also gives the results since the beginning of the war :—

Table VIII.

Prophylactic injections.	Rate of mortality per cent.			
	1914-15.	1915-16.	Aug. to Oct., 1916.	Oct. to Dec., 1916.
Received.	51·3	42·8	27·4	16·4
Not recorded.	41·1	52·0	44·8	40·5
None given.	62·5	55·5	54·5	64·7

In regard to the question as to what influence, if any, promptitude in giving these prophylactic injections has in reducing mortality the following table gives all the available information :—

Table IX.

No. of cases.	Inoculated.	Recovered.	Died.	Mortality per cent.
42	On day of wound.	35	7	16·6
9	One day after wound.	7	2	22·2
7	Two days ,, ,,	7	0	—
1	Four ,, ,, ,,	0	1	—
2	More than four days.	2	0	—

Of the 42 cases inoculated on day of wound the average incubation period was 48 days. Of the 17 cases which are reported to have received no prophylactic inoculation the average incubation was 14 3 days.

On the Results Obtained from Multiple Prophylactic Injections.

The Tetanus Committee have laid down that four prophylactic injections should be given to every wounded soldier at intervals of seven days. In the 100 cases under review the case mortality was 31 per cent. It will be remembered that only 61 out of the 100 cases were recorded as having received a prophylactic injection in France.

The following table represents the rate of mortality of cases of tetanus which have received one to four prophylactic injections. From this table it would appear that one prophylactic inoculation is more potent than two, three, or four, but the numbers are small.

Table X.

Number of inoculations.	No. of cases.	Recovered.	Died.	Mortality per cent.
Received one.	37	33	4	10·8
,, two.	18	14	4	22·2
,, three.	5	3	2	40·0
,, four.	1	1	0	0·0

Table XI. represents the effect of one inoculation or more on the incubation period.

Table XI.

Number of inoculations.	No. of cases.	Average incubation period in days.
1	37	49·3
2	18	38·7
3	5	73·4
4	1	70·0

B. *Therapeutic or Curative Treatment.*

Out of the total of 100 cases the number treated with antitetanic serum after the onset of symptoms was 98. Two cases did not receive therapeutic treatment with antitetanic serum in England ; 1 recovered, 1 died. The patient who recovered is reported to have had a prophylactic injection on day of wound ; of the one who died there is no record. The man who recovered showed symptoms of tetanus after an incubation of 63 days ; he had opisthotonos but no trismus. The symptoms lasted for three days. He was treated with nux vomica and strychnia. There is no reason given for his not having received specific treatment. The man who died showed symptoms of tetanus on Nov. 5th and died four days afterwards. Very few details are given in his tetanus report, but it is evident that antitetanic serum was not given owing to failure to diagnose the disease in time. On Oct. 30th an amputation of the affected leg was performed, but no prophylactic injection was given at the time. It is evident that in these two cases the recommendations of the Tetanus Committee were not followed.

Of the 98 cases which received serum treatment 68 recovered and 30 died. Mortality, 30·6 per cent.

On the Influence of Route in the Injection of Antitetanic Serum.

The Tetanus Committee in their Memorandum are of opinion "that in acute general tetanus the best method of treatment lies in the earliest possible administration of large doses of antitoxin serum by the intrathecal route." Of the 98 cases—

	Mortality per cent.
3 were treated by subcutaneous injections alone ; 2 recovered, 1 died	33·3
10 were treated by intramuscular injections alone ; 8 recovered, 2 died	20·0
1 was treated by intravenous injection alone ; 1 recovered ...	0·0
2 were treated by intrathecal injections alone ; 2 died	100·0
There were 75 cases which included intrathecal injections ; 49 recovered, 26 died	34·6
There were 23 cases which did not receive intrathecal injections ; 19 recovered, 4 died	17·4
There were 15 cases which included intravenous injections ; 13 recovered, 2 died	13·3
There were 83 cases which did not include intravenous injections ; 55 recovered, 28 died	33·7

It would appear from the above table that no advantage in favour of intrathecal injections emerges from the figures, as seemed to be the case in 1914–15. The numbers are too small, but are given in order to make the different analyses comparable. It must also be noted that it is the severe cases which are treated by the intrathecal route, the slight cases by the intramuscular or subcutaneous. As is shown elsewhere, cases of localised tetanus tend strongly to recovery, and it is in these cases that intramuscular injections are given. It is, in fact, so laid down in the Memorandum on Tetanus: "In the *chronic forms of tetanus*, particularly the form of localised tetanus limited to one limb, without trismus or other sign of generalisation, there appears to be no need to resort to intrathecal injection. A course of serum treatment by the intramuscular method will, in most cases, do all that is required."

It may be thought that an apology to the reader is demanded for bringing up figures that prove nothing. But it may be urged that the same figures give information of some kind or another; for example, it is shown that in the latter part of the year 1916 98 per cent. of cases of tetanus were treated in England by antitoxic serum, and in 75 per cent. the serum was inoculated intrathecally. This is of some interest to-day, and may be of more interest in the future.

IS THERE ANY OTHER EVIDENCE TO BE FOUND IN THE TETANUS REPORTS THAT THE INTRATHECAL ROUTE HAS ANY ADVANTAGE OVER THE OTHER METHODS OF INJECTION?

Treatment Beginning on Day of Onset of Disease.	Mortality per cent.
During the period October–December, 1916, 57 cases were treated with antitetanic serum on the day the symptoms declared themselves. 34 recovered, 23 died	40·3
Out of the 57 cases the following received antitoxin, but not intrathecally, on the day of the disease. 26 cases: 18 recovered, 8 died	30·7
Out of the 57 cases the following received antitoxin, including intrathecally, on the day of onset of the disease. 31 cases: 16 recovered, 15 died...	48·4
Treatment Beginning on the Day following the Onset of Disease.	
During this period 12 cases were treated with antitetanic serum beginning one day after the symptoms had declared themselves. 11 recovered, 1 died	8·3
Out of the 12 cases the following received antitoxin, but not intrathecally, one day after the onset of the disease. 10 cases: 9 recovered, 1 died	10·0
Out of the 12 cases the following received antitoxin, including intrathecally, one day after the onset of the disease. 2 cases: 2 recovered	0·0
Treatment Beginning Two Days after the Onset of the Disease.	
During this period 8 cases were treated with antitetanic serum, beginning two days after the symptoms had declared themselves. 6 recovered, 2 died	25·0
Out of the 8 cases the following received antitoxin, but not intrathecally, two days after the onset of the disease. 2 cases: 2 recovered	0·0
Out of the 8 cases the following received antitoxin, including intrathecally, two days after the onset of the disease. 6 cases: 4 recovered, 2 died.	33·3
Treatment Beginning Three to Eight Days after the Onset of the Disease.	
During the same period 21 cases were treated with antitetanic serum, beginning three to eight days after the symptoms had declared themselves. 17 recovered, 4 died	19·0
Of the 21 cases the following received antitoxin, but not intrathecally, three to eight days after the onset of the disease. 11 cases: 10 recovered, 1 died	9·0
Of the 21 cases the following received antitoxin, including intrathecally, three to eight days after the onset of the disease. 10 cases: 7 recovered, 3 died	30·0

It is evident that no case either for or against the intrathecal route can be made out from these figures, and again, as in the last analysis, it would appear better to defer treatment for one or more days after the onset of the disease. This probably only means that the severe cases are treated at once; the less severe are dallied with.

THE INFLUENCE OF DOSAGE ON THE CURATIVE ACTION OF ANTITETANIC SERUM.

(a) The Total Quantity of Antitoxin Given During the Attack.

Out of the 98 cases—						Mortality per cent.
0 received	1,000 units or under.		Recovered.	Died.		0·0
2 ,,	1,001 to 5,000 units	... ...	2	0		
8 ,,	5,001 ,, 10,000 ,,	... ...	4	4		50·0
9 ,,	10,001 ,, 15,000 ,,	... ...	7	2		22·2
5 ,,	15,001 ,, 20,000 ,,	... ...	5	0		0·0
15 ,,	20,001 ,, 30,000 ,,	... ...	8	7		46·0
12 ,,	30,001 ,, 40,000 ,,	... ...	8	4		33·3
19 ,,	40,001 ,, 60,000 ,,	... ...	12	7		36·8
21 ,,	60,001 ,, 100,000 ,,	... ...	16	5		23·8
7 ,,	100,001 ,, 249,000 ,,	... ...	6	1		14·2

(b) The Daily Quantity of Antitoxin Given.

Out of the 98 cases—					
1 received	1,000 units or under	... ...	1	—	0·0
31 ,,	1,001 ,, 5,000 units	... ...	29	2	6·4
33 ,,	5,001 ,, 10,001 ,,	... ...	21	12	36·3
22 ,,	10,001 ,, 20,000 ,,	... ...	13	9	40·9
7 ,,	20,001 ,, 30,000 ,,	... ...	2	5	71·4
3 ,,	30,001 ,, 40,000 ,,	... ...	1	2	66·6
1 ,,	40,001 ,, 52,000 ,,	... ...	—	1	100·0

From these figures relating to dosage no useful deduction can be made. They may be useful to enable a comparison to be made with the amount of serum given at different periods during the war.

OTHER THERAPEUTIC REMEDIES.

During this period no cases were treated with carbolic acid injections or magnesium sulphate.

CONCLUSIONS.

1. In the 100 cases of tetanus under review the mortality was 31 per cent.
2. The ratio of the number of cases of tetanus to the wounded has fallen greatly since the beginning of the war, due in all probability to a great extent to the introduction of prophylactic injections of antitetanic serum.
3. The incubation period tends to become longer, hence there are only 12 cases reported with an incubation of 10 days or under.
4. Only 10 cases are reported to have received secondary prophylactic injections of antitetanic serum in home hospitals.
5. In regard to the therapeutic effect of antitoxic serum the evidence is still inconclusive.
6. The rate of mortality in generalised tetanus is 34·4 per cent., in localised tetanus 0·0 per cent.

WAR NEPHRITIS.

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TEMPORARY CAPTAIN, R.A.M.C.;
AND
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TEMPORARY CAPTAIN, R.A.M.C.

THIS communication is based upon the study of 250 cases of nephritis which have come under the personal treatment or supervision of one of us (C. E. S.), and upon the pathological investigation of the last 50 of these (A. T. N.). The figures quoted below refer to 160 of those cases whose records are available.

It is proposed to deal with the subject under the headings of Clinical Aspects and Pathology, and to review the various work which has been done upon its etiology.

Clinical Aspects.

Seasonal incidence.—Our own cases reached their maximum in the months of January and February. This is contrary to the observations of other writers and is probably to be explained by an increase in the military population from which this hospital draws its sick; during these months divisional units were "resting" in the neighbourhood.

Age incidence.—The average age of our last 160 patients was 31 years. The disease was commonest in the decade 25 to 35; 8 per cent. of the cases, in which a history of previous disease could be excluded, occurred over the age of 40.

Previous renal disease.—A history of this could rarely be obtained. Of 160 cases, 6 certainly and 2 probably had suffered from a previous attack of nephritis. Of these, 2 gave a history of nephritis while on active service, one six months, the other 12 months previously; 4 had had acute nephritis in civil life; 2 gave histories of scarlet fever with delayed convalescence within the preceding five years.

Nature of the duties on which the patients were employed.—Of our 160 cases 10 per cent. had never been in the front line; while the remainder had all served at the front, in many cases such service had been discontinued for a period of weeks or months before the onset of nephritis. Three of our 250 cases occurred in officers. The average stay in France of our last 80 cases was 7½ months; 5 cases occurred before the fourth month.

Associated conditions.—Some degree of bronchitis was a constant feature; it was often a serious complication, and in two of the fatal cases was responsible for death. Septic infection of the skin in the form of impetigo or a superficial wound was present in 12 of our cases. Trench-foot was present in two cases. Quinsy preceded the onset of nephritis by five days in one case. (Contrast Citron.[6])

Type of case.—There are all varieties in the severity of the disease, ranging from the slight attack with little or no œdema to the typical and fatal case. It seems possible that slight atypical or abortive cases, who suffer from an undiagnosed malaise, may recover without admission to hospital.

Mode of onset.—The appearance of the more striking symptoms is so impressive that it is only occasionally that the patient volunteers the statement that he had been indisposed for any time before he was compelled to "go sick." Careful inquiry will, however, in a large majority of instances, elicit the information that there has been some departure from the normal health for two or three days before the onset of the acute symptoms. Such slight prodromal symptoms include headache, backache, "a cold," and a feeling of fatigue after slight exertion; some degree of bronchial catarrh is practically constant at this stage. Alimentary symptoms are rarely mentioned, and it is unusual for complaint to be made of any alteration of urine or micturition during the prodromal period, but some patients speak of "scalding" as having occurred from the very commencement of the illness. The following symptoms and signs are found in every typical case: œdema, dyspnœa, headache. Very common, but not invariable, are backache, limb-pains, slight pyrexia, and scanty micturition. Probably if these patients came under observation at the earliest stage of the disease these symptoms would be more often in evidence.

Œdema.—This always affects the face; it may be confined to this situation or involve the whole body. The positions in which it is found are, in order of frequency, face, feet, hands, lumbar region, scrotum, and abdominal wall. Ascites and pleural effusions are uncommon except in those patients in whom the disease tends to run a prolonged course. The duration of the œdema is very variable—usually it disappears rapidly; if the case is not seen during the first three or four days it may already be entirely absent; we have seen it disappear completely within 36 hours of the onset. Associated with the œdema an almost characteristic flush of the skin is often seen; it is not a cyanosis, but a red flush resembling early sunburn. In our experience this appearance has been most noticeable in patients suffering from capillary bronchitis.

Dyspnœa.—Some degree of respiratory distress is constant. Most of the patients describe the onset as quite sudden; the man may parade in full marching order without discomfort, and fall out a few minutes later, quite unable to march after the column has gone a few hundred yards. Many of the men, however, when closely questioned, state that they have noticed gradually increasing shortness of breath for two or three days before the occurrence of the dramatic attack. In a large proportion of cases this shortness of breath, slight and gradual or sudden and severe, may precede the appearance of facial œdema by several days. When at rest the condition is one of hurried respiration rather than a true dyspnœa: it lasts for several days and may persist after the disappearance of œdema. Cheyne-Stokes respiration is not seen except in conditions of severe uræmia. Urgent respiratory distress while the patient is at rest may occur if the disease is complicated by severe bronchitis or as a manifestation of uræmia. Two of our seven deaths were due to sudden uræmic dyspnœa.

Headache.—All our patients suffered from dull headache, most commonly frontal, often occipital, rarely vertical. This is one of the earliest symptoms and is often of long duration. An increase in its severity has been noted as a herald of uræmia. We were unable to demonstrate a definite relationship between the degree of the headache and systolic blood pressure. Its disappearance is accompanied by a sense of well-being which cannot, in our opinion, be entirely due to the relief from a moderate though persistent pain.

Cough.—All our patients suffered to some extent from cough, often accompanied by a considerable amount of expectoration, the sputum being usually frothy and liquid, except in those cases which were complicated by purulent bronchitis.

Backache.—This is practically constant; rarely severe, it persists for several days. It is localised to the loin, and does not radiate; it is variously described as a dull ache, a weight or a load on the loins.

Abdominal pain is occasionally complained of; in our experience chiefly in those patients who suffer from uræmic symptoms. It is transient and variable in intensity and position.

Limb-pains.—These are common but transient. Nothing approaching in severity or persistence the "shin-pains" of trench fever has been met with. This point is of some olinical importance, for in many cases of trench fever albuminuria occurs during the first few cays. The limb-pains of nephritis are present only in the early stage of the disease; they disappear with the return of the temperature to normal.

Urine.—In the first days oliguria or suppression is the rule—this is usually of a few days' duration only, and is frequently followed by polyuria which persists after all obvious œdema has disappeared. Frequency and scalding are not uncommon during the first few days. Incontinence of urine in non-comatose patients occurred in two cases in our series. This symptom has been noted by a German observer. In 250 cases true dysuria with hypogastric and penile pain was present; these may have been "lower tract" affections as described by Abercrombie.[5] They recovered without special medication.

Albuminuria is constant at first but may be remarkably transient; it has a tendency to vary from day to day irrespective of diet changes. No information as to its ultimate persistence is given by the cases of our series, for they were too short a time under observation.

Hæmaturia.—Naked-eye examination reveals the presence of blood in rather less than half the cases. Its amount is even more variable than the albumin, but it may be most persistent. The microscopical characters of the urine are described under the heading of "Pathology."

Temperature.—Moderate pyrexia for a few days is the rule: its duration is brief and relapse uncommon. In the presence of associated disease, such as sepsis or severe bronchitis, the pyrexia is more definite and sustained; but with these exceptions war nephritis may, after the few days at the onset, be regarded as an afebrile disease.

Pulse.—The pulse-rate is little altered. It may rise to 90 or 100 and remain at this figure for a week or 10 days, but persistent tachycardia has been a very rare symptom. In two cases it occurred without any other apparent cause.

Blood pressure.—The hæmodynamometer was not used in all cases, and experience has convinced us of the fallacy of relying upon digital impressions in estimating blood pressure. The highest record obtained was 210 mm.: this was met with in a uræmic case, in the presence of which complication readings of 150–180 were not uncommon. In mild and quiescent cases no striking rise of blood pressure was met with.

Eye changes.—Captain R. Graham Brown, R.A.M.C., kindly reported upon 35 consecutive cases. The fundus was normal in 29, while in 6 slight blurring of a portion of the disc margin or papilloedema was present. All these patients had facial œdema. The retinal change and the facial œdema appeared to clear up at the same time. No case was under observation at a sufficiently late stage for chronic changes to be manifest. Transient blindness occurred in 2 cases as one of several uræmic symptoms. Difficulty in reading was complained of by a few patients early in the disease, and some of these had slight blurring of the disc; but it is doubtful whether this disability could not be explained by general causes.

Complications.—Only two serious complications were met with—bronchitis and uræmia. The importance of the former is very great, and its presence has a very adverse influence upon prognosis.

Uræmia is seen in about 8 per cent. of the cases. Its onset is usually early in the disease; it may afford the first manifestation. In only 2 cases of our 160 did it occur after the tenth day. The common manifestations of uræmia are torpor, severe headache, nausea, vomiting (always to be regarded as a danger-signal), and convulsions. Uræmic convulsions in this disease present several interesting features. They come on with very little warning, they are very violent, they usually occur quite early in the course of the illness, and, paradoxical as it may seem, are to be

regarded on clinical experience as of good prognosis provided they are not fatal within the first few hours. Our experience has been that those patients who have had severe uræmic convulsions calling for active measures and causing considerable alarm have, after a few days of semi-coma, passed on rapidly towards almost complete recovery; their albuminuria has ceased, the flow of urine has been re-established, and there has been a speedy return of a sense of well-being. Chronic uræmia, giving rise to a prolonged state of cheerful busy delirium bordering on mania, occurred in two cases who ultimately returned to apparently normal mental health.

Treatment.

Treatment has been mainly expectant or aimed at the removal of complications as they arose. Diuretics were rarely used and seemed of no value. Diaphoretics were employed in a few cases, but it is doubtful whether they had any influence on the course of the disease. It is remarkable how these patients sweat without drug treatment. It is the exception to find the skin dry after the first few days. Hot packs were rarely used; they seemed of doubtful benefit and, by adding to risk of chill, a real danger. Fluids were not restricted, but the patients were not encouraged to drink more than they desired. No attempt to wash out nitrogenous material by flushing the system was made. A reason for avoiding copious drinks is the effect which the intake of large quantities of fluid has upon the blood pressure. Purgation was used, but was never drastic. Calomel gr. iii. at night followed by a saline purge in the morning was the routine. Occasionally an enema was employed at the commencement of the treatment.

All cases were kept for three days at least on a rigid milk diet. Three pints per diem were allowed. After this time, if the albumin showed signs of diminishing, if blood was no longer visible to the naked eye in the urine, if the quantity of urine was normal, if the blood pressure was not raised, and if headache was not troublesome, an increase in the diet was allowed—toast, biscuits, a flavouring of tea in the milk, rice-milk (a fluid form of rice pudding made without eggs). In no case did the patient's condition call for a return to strict milk diet.

While uræmic danger-signs were present the strict milk diet was enforced. The treatment of uræmia followed the usual lines—venesection, intravenous infusion of saline, and lumbar puncture. The last operation is of the greatest benefit; it is necessary to perform it under chloroform anæsthesia on account of the uncontrolled movement of the patient; the removal of six or seven drachms of fluid is followed by a striking improvement. The fluid is usually under slightly increased pressure, but it is possible that this is due to the anæsthesia.

Opium in the form of morphia or omnopon was given freely and with benefit in uræmic cases; its diaphoretic effect was very noticeable.

In the chronic form of excitement bromide, even in large doses, had little or no effect; opium had to be substituted.

Prognosis.

Our observation of these cases has been too short to allow any opinion as to their ultimate prognosis to be formed, but certain points bearing on their immediate prognosis have been noted. The coexistence of a severe degree of bronchitis is of bad omen; four cases died and the partial recovery of others was delayed greatly. The coexistence of sepsis did not seem to have any adverse influence. The presence of uræmic symptoms varied in significance. The cases that showed great sleepiness during the first few days did as well as those who did not show this sign. Uræmic convulsions, as has already been noted, if not immediately fatal, were shown by experience of several cases to be of good prognosis. Persisting mental changes, which may be regarded as uræmic in origin, however, were associated with persistence of albuminuria and hæmaturia long after the normal date for their disappearance. The blood pressure in the early stages gave little guidance. Some patients with a systolic pressure of 180 mm. Hg made as rapid a recovery as those in whom the pressure was not raised. As a herald of approaching uræmia sustained high blood pressure may be regarded as of importance. Pressure-readings during or immediately after a convulsion are probably of little value, as they must be influenced by the muscular exertion involved in the seizure. As no patient was allowed to get up before his evacuation from this hospital no information is available as to the possible return of albuminuria in non-albuminous cases after apparent recovery and on the resumption of the erect posture. Temporary increase of the albumin occurs commonly in cases still confined to bed without change in general symptoms and appears to be independent of changes in the diet.

Pathology.

The urines from 50 cases of war nephritis have been examined since February of this year. Concurrently with these, 44 urines, both from normal individuals and from men who were patients in hospital, have been examined as a control.

All cases of war nephritis showed casts in the urine. The casts were hyaline, granular, fatty and blood, the first two being the most common. As would be expected, the more definite the clinical symptoms the larger was the number of casts. Again, all cases of war nephritis showed the presence of many degenerate endothelial cells in pronounced distinction to urines obtained from men suffering with other illnes-es where endothelial cells were few or absent. The presence of casts and of endothelial cells is, in our opinion, sufficient microscopical evidence on which to diagnose this form of nephritis. The endothelial cells are of all shapes and sizes, but are most commonly spherical, varying from about 10μ to 35 or 40μ. They show vacuoles, one or more nuclei, and are invariably granular in appearance. They are in all stages of degeneration. Occasionally one has been seen to bud, and it is common to find one bursting open and the intracellular protoplasm being distributed into the surrounding fluid. It seems to us that these cells may be similar to the "amœba urinata granulata," described by other writers.[1 2] They have never shown any true amœboid movement, however, and are exactly similar in appearance to endothelial cells from pleural effusions or to those found in the fæces in chronic cases of dysentery. They stain well in moist preparations, especially if the urine sediment has previously been washed in distilled water. As has been said, their presence in the urine of cases of war nephritis is invariable, nor are they found in any number in other conditions. We had two cases, however, of injury in the loin, where although the kidney was not damaged microscopically endothelial cells were found in the urine. These were, no doubt, due to the fact that the kidney substance was disturbed by the force of the original wound shock or by toxin absorption from the wound. This was confirmed by microscopical examination in one case.

In mild cases of war nephritis a few only of such degenerate cells will be found in the centrifugalised deposit of the urine. In a serious case many may be found in each field of the microscope (objective 6 X eyepiece). One of our cases who at first showed no definite clinical signs gave no endothelial cells in the urine, but as his symptoms of nephritis developed the endothelial cells appeared. These bodies persist in the urine after the patient is apparently well—even when the urine shows no casts; and perhaps they may be of value not only in the diagnosis of a doubtful case, but also in determining whether a man has had war nephritis in the past. How long they persist we are at present unable to say.

Thirty-six out of these 50 cases showed red blood corpuscles in the urine. The amount of blood did not appear to indicate the severity of the attack. One of our most serious cases had very little; other clinically mild cases showed much blood. The determination of the presence of red blood corpuscles was made microscopically on the centrifugalised deposit of a fresh specimen.

Twenty-two men had albumin in the urine, and the urines of the remainder—28—failed to give the nitric acid or boiling test for albumin.

A few red blood cells, a few casts, and endothelial cells in a low specific gravity urine would hardly be sufficient to give a definite and appreciable chemical test, and here we would like to urge the importance of examining microscopically the centrifugalised deposit of urine, since in the absence of this definite examination it would be possible to miss many slight atypical or convalescent cases. Renal tubule cells and cells from the renal pelvis, in all stages of degeneration, were found in 9 cases out of the 50. Leucocytes, more in number than could be accounted for by the blood in the urine, were present in 3 cases.

Of the series of negative cases taken concurrently with those of war nephritis, none showed either casts, or more than a very few endothelial cells. Five had albuminuria; 1, who was possibly suffering from a renal calculus, showed renal pelvis cells; 5 had blood in the urine; 4 showed excess oxalates; and 7 had leucocytes. Of these 44 cases 7 had definite inflammation of the urinary tract, without, however, the endothelial cells found in the nephritis cases.

No cultural results were obtained aerobically or anaerobically—either from the urines or from two cases whose venous blood was examined.

Blood films were made and differentially counted in 15 cases with the following results: Small mononuclears ranged from 16 to 30 per cent., with an average of 22·2 per cent.; large mononuclears from 8 to 18 per cent., with an average of 13·3 per cent.; finely granular polymorphonuclear leucocytes ranged from 47 to 69 per cent., with an average of 62·1 per cent.; and eosinophiles were from 1 to 5 per cent., with an average of 2·4 per cent. "Mast" cells were not counted differentially, but were present frequently. No myelocytes were observed. Basophiles were found occasionally. No obvious change was noted in the red cells and no parasites were observed. The blood counts individually were typical of the so-called protozoal blood count with large mononuclear increase, and in addition to this most of the cases showed a slight eosinophile increase. Citron [6] in his cases records an eosinophilia up to 10 per cent.

Two specimens of the cerebro-spinal fluid from cases of uræmia were examined. One was apparently a normal fluid, the other showed excess of small mononuclear cells and contained 0·022 per cent. of urea. Aerobic and anaerobic cultures failed to isolate any pathogenic organism. Only one case of war nephritis has died out of this series of 50. At the post mortem the kidney was found apparently normal and not appreciably enlarged—it certainly was not the enlarged and œdematous kidney of ordinary acute nephritis, and showed no intense engorgement such as is found in early scarlatinal nephritis. No macroscopic changes were evident. Parts of one kidney were fixed in formalin 10 per cent. and mounted in paraffin. Sections were cut of these and were specially stained and examined for micro-organisms and for protozoa. None, however, were observed. Sections stained with hæmatoxylin and eosin showed the following points of interest. The nephritis was irregular in distribution; parts of the kidney seemed absolutely normal—one field, for example, showed healthy kidney tissue, and yet the field next to it showed definite evidence of disease. The nephritis is both tubular and glomerular. Many of the glomeruli were almost entirely destroyed or swollen and degenerate and filled with endothelial plugs. The cells lining Bowman's capsule showed almost equal destruction, as did the cells of the convoluted and straight tubules. Some of these latter were found filled with casts. Between the glomeruli and among the tubules were patches of interstitial hæmorrhage. The smaller arterioles in the affected parts of the kidney showed endarteritis. The nephritis was, in other words, focal and not diffuse. This has also been observed by Pick.[4a]

Of the total number of our clinical cases (250 in all) there were seven deaths. A post-mortem examination was made on each of these, although, with the exception of the case described above, no microscopical investigation of material was possible, in the absence at that time of laboratory facilities. The most striking feature was the small departure from normal in the naked-eye appearance of the kidneys. Four cases had suffered from severe intercurrent purulent bronchitis with consequent circulatory embarrassment. No case showed evidence of chronic renal disease. Patchy pallor of the cortex was noticed in two cases. Moderate enlargement was seen in one case: the others showed no macroscopic changes except for slight blurring of the cortical structure in one case. These patients had died between the fourth and seventeenth day of illness.

Etiology.

It is proposed shortly to consider the various hypotheses that have been advanced on the etiology of war nephritis and to discuss the validity of each.

Damp, cold, and exposure have been suggested by many writers as predisposing causes or even as the immediate causative agents of nephritis. Hirsch, at the Austro-German Medical Congress at Warsaw,[3] Pick,[4] and others lay special stress on this exposure theory. During the Franco-Prussian War, in which a German authority states that there was much nephritis, it is interesting to note that the chief fighting took place in wet weather. But against this we have the incidence in the American Civil War, 1861–63, when the cases were most frequent in the summer months. Again, Rose Bradford [5] notes that cases were few in the British Expeditionary Force until March and April, 1915, and that their incidence in the summer of that year was especially high. Taken together, all these conflicting observations do not favour the supposition that damp, cold, and exposure are essential epidemiological factors.

Forced marches have been suggested as a possible cause by Th. Rumpel.[6] Certainly prolonged fatigue may produce albuminuria; but this is only transitory, and there is no evidence that this passing albuminuria predisposes to disease at a later date. As a predisposition to renal disease it is as unlikely a factor as a surfeit of green apples is a factor in the cause of mucous colitis. Typical war nephritis occurs among people who have been subject to no excessive muscular fatigue—e.g., hospital nurses and orderlies and patients convalescing from some other disease and from injury.

Streptococcal tonsillitis was suggested by Citron [7] as a cause. We find no incidence of this, nor does Abercrombie in his paper [8] give any support to this hypothesis. A few of our cases, but a few only, had a streptococcal infection—viz., impetigo; but the majority did not show this.

Singer [9] considers that dysentery is a predisposing factor, and also that protective inoculation against enteric fever may lead to a stirring up of other organisms which had hitherto been quiescent. No other writer has, as far as we can learn, considered dysentery to be a factor in the epidemiology of war nephritis, nor do our own cases lend any support to this view. Again, there is nothing in the suggestion that inoculation or vaccination predisposes a man to nephritis. Troops at home are not affected with nephritis, although they are vaccinated and inoculated against enteric.

Lead, arsenic, and zinc have been accused of being the causative agents of this condition. They can be ruled out at once. The cases do not develop any of the well-known symptoms caused by these poisons, and Mackenzie Wallis [10] has been able to show by ultra-filtration that the urines of cases of war nephritis do not contain salts of the heavy metals.

Thornley claims [11] to have isolated a small Gram-negative diplococcus from the blood of cases of war nephritis. As far as we can discover, this work has not been confirmed, and our own blood cultures showed no such micro-organisms. Mackenzie Wallis [10] considers that there are powerfully toxic agents in the urines of cases, and that the organism may be ultra-microscopic. He has not succeeded in producing the typical disease in animals.

That the affection originates in the lung tissue has been suggested by Dunn,[12] who described changes in the lungs similar to those seen in cases of irritant gas poisoning. It is possible that the pathological changes noted by this observer were the result of the purulent bronchitis, so often a complication, to which attention has been drawn already. It seems rather to be an intercurrent affection than to have any causative influence on this disease. Exposure to irritant gas could be absolutely excluded in the majority of our own cases.

McLeod and Ameuille [13] conclude that the disease is due to deficiency of certain elements in diet and to the consumption of excessive protein. They think that this is the most likely explanation of transient albuminuria, and that it may contribute towards the development of the more severe cases. They are supported by Gaud and Mauriac,[14] who consider that fatigue and deficient food elements are the most important factors in the causation of war nephritis.

In the face of so many conflicting facts and theories regarding the epidemiology of this disease it may safely be said that the cause is still unknown.

The possible infective nature of nephritis is suggested by the following points: there is frequently a febrile onset; the disease according to Abercrombie [8] relapses in about 2 per cent. of cases, which is one of the characteristics of protozoal infections; the slightly raised eosinophile count and the marked increase in large mononuclears support this hypothesis.

Rose Bradford[15] and also Pick[4] have drawn attention to the comparative immunity of officers to war nephritis, and the former has also reported the complete immunity of the Indian troops to this disease. The Indian troops suffered from all other war diseases, including bronchitis, but not from nephritis. These facts suggest that British officers and Indian troops share something in common, or avoid something equally, which influences the onset of war nephritis. In the British Army officers and men at the front line live under almost similar conditions: all drink from the same water-supplies; all breathe the same polluted air and live under the same unpleasant conditions. The officers do, however, eat fresh food. Even in the trenches during the Somme battle salads and fruit were seen in officers' dug-outs. When out at rest officers buy fresh food and vegetables and are able often to obtain new milk; in other words, they supplement their rations. This applies equally well to officers living on the lines of communication or at the base; probably they have a "ration mess," but certainly they supplement their rations with fresh food. The soldier, however, does not do this. He draws his rations, but has little or no opportunity, even if he desires to do so, of purchasing fresh eatables. The Indian troops were accustomed to eat fresh meat newly killed and not the frozen or canned meat of European troops. They had fresh milk and not the tinned variety. So, in common with British officers, the native troops obtained fresh food.

It is perhaps a suggestive fact that in the urines of cases of beri-beri Hewlett and De Korté[16] found a body similar in appearance to the endothelial cell. We, too, have found endothelial cells in the urines of cases of beri-beri imported into France with Asiatic labour.

The hæmaturia of war nephritis, which is often persistent, is reminiscent of that which occurs in mild cases of scurvy. It is interesting to note that the majority of cases had been in this country, and restricted living rations, for about seven months. Experience of work with front-line battalions has impressed upon both of us the frequency of boils and skin eruptions, the scorbutic origin of which is suggested by their great improvement when a lime-juice ration was instituted. The objection may possibly be raised that the maximum incidence of the disease corresponds with the summer weather and the fruit season; this is met by the fact that fresh fruit and vegetables in France are beyond the financial resources or cooking abilities of the average soldier.

Careful consideration of all the views discussed above leads us to think that war nephritis may be attributed to some error in metabolism due to dietary deficiency. Our own observations would suggest the possibility of this, although we feel that our hypothesis is as yet by no means proved.

We wish to express our thanks to Major A. B. Smallman, D.S.O., R.A.M.C., for his kindness in affording us access to the publications of other writers upon this subject.

Bibliography.—1. Brit. Med. Jour., April 8th, 1916, p. 526. 2. Proceedings Royal Society of Medicine, Section of Pathology, Dec. 5th, 1916. 3. THE LANCET, July 1st, 1916. 4. Münch. med. Woch., Feb. 1st, 1916; quoted by Brit. Med. Jour., August 19th, 1916. 5. Quarterly Journal of Medicine, vol. ix., No. 34, January, 1916. 6. Austro-German Medical Congress at Warsaw, THE LANCET, July 1st, 1916. 7. Ibid. 8. Abercromble: Journal of the Royal Army Medical Corps, August, 1916. 9. Wien. med. Woch., Oct. 13th, 1915; Brit. Med. Jour., Jan. 8th, 1916. 10. Mackenzie Wallis: Journal of the Royal Army Medical Corps, August, 1916. 11. Brit. Med. Jour., Dec. 16th, 1916. 12. Dunn: Medical Society of London, Nov. 13th, 1916; reported in THE LANCET, Nov. 18th, 1916. 13. THE LANCET, Sept. 9th, 1916. 14. Gaud and Mauriac: Paris Méd., April 15th, 1916; reported in Brit. Med. Jour., May 13th, 1916. 15. Rose Bradford: Quarterly Journal of Medicine, January, 1916. 16. Journal of Tropical Medicine, Oct. 1st, 1907, p. 315.

WOMEN AND THE INDIAN MEDICAL SERVICE.—The Government of India is said to be considering the advisability of employing a certain number of medical women in the Indian hospitals with a view to setting free more medical officers for military service. The names of medical women prepared to offer their services are being called for.

MEDICAL DISPENSARY AND WORKHOUSE SALARIES IN IRELAND.—The Lurgan board of guardians have (Sept. 6th) adopted a graded scale of salaries for the medical officers of that union. The new scale means that the salary of Dr. W. W. Duff (Aghalee) will be increased from £100 to £145; Dr. S. Agnew's (Lurgan), £123 to £160; Dr. H. Reid's (Montiaghs), £110 to £135; Mr. T. H. Brownrigg's (Moira), £106 to £150; Mr. J. L. Rowlett's (Portadown), £110 to £160; Dr. G. Dougan's (Tartaraghan), £100 to £150; Dr. W. Frier's (Waringstown), £100 to £150; Dr. J. S. Darling's (Workhouse), £130 to £155.

A REPORT ON THE TREATMENT OF *ENTAMŒBA HISTOLYTICA* "CARRIERS" WITH EMETINE BISMUTH IODIDE,

GIVING A COMPARISON BETWEEN THE KERATIN-COATED TABLOIDS AND SALOL-COATED PILLS.

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(*A Report to the Medical Research Committee from the Mont Dore Military Hospital, Bournemouth.*)

THE treatment of the 104 cases dealt with in this report was carried out in a special ward set apart for the purpose. The cases were under the care of one medical officer in order to keep the conditions of treatment as uniform as possible. Both forms of the drug were given in doses of 3 grains per day for 12 consecutive days without any additional treatment. The tabloids and pills were given entire as a full dose during breakfast. We have considered a case to be cured when he has had at least six or seven negative tests over a period of not less than seven weeks from the termination of his course of treatment. The last one or two tests were made at the Barton Convalescent Depôt. The great majority of the cases, however, had many more tests: some were examined almost daily and were under observation for nearly three months after the end of treatment.

First Course of Treatment.

The number of men treated with one course of the keratin-coated tabloids supplied by Burroughs, Wellcome and Co. was 79 and the number of men who were given one course of the salol-coated pills prepared by Allen and Hanburys was 25.

We have found it advisable to divide these two sets of men into those who had injections of emetine hydrochloride before entering hospital and those who did not receive this treatment. The results are as follows:—

Cases without emetine injections.—Forty-five men were given one course of the keratin-coated tabloids and 29 were cured—i.e., 64·5 per cent.

Seventeen men were given one course of the salol-coated pills and 12 men were cured—i.e., 70 per cent.

Cases with emetine injections.—Thirty-four men were given one course of the keratin-coated tabloids and 12 were cured—i.e., 35 per cent.

Eight men were given one course of the salol-coated pills and five were cured—i.e., 62 per cent.

Second course of treatment.—Twenty-four men who had relapsed after one course of the keratin-coated tabloids were given a second course of the same form of the drug and four were cured—i.e., 16·6 per cent.

Fourteen men who had relapsed after two or three courses of the keratin-coated tabloids were treated with one course of the salol-coated pills and four were cured—i.e., 28·5 per cent.

Effect of the Time Interval between the Onset of Disease and Treatment.

The object of this part of the inquiry was to ascertain whether those cases which relapsed after treatment could be shown to be "carriers" of longer standing, in whom *E. histolytica* had become better established and consequently harder to cure. In order to make certain, as far as possible, that the onset of disease referred to was that of amœbic dysentery, only those patients were included under this section whose blood failed to agglutinate *B. dysenteriæ* Shiga and *B. dysenteriæ* Flexner.

Cases without emetine injections.—Out of 19 men who were cured by emetine bismuth iodide (E.B.I.) 7 (36·8 per cent.) had an interval of over 20 weeks between the date of onset of their dysentery symptoms and the date on which they received E.B.I. treatment. The average interval for the 19 cases was 19 weeks.

Out of 14 men who relapsed after treatment with E.B.I. 8 (50·7 per cent.) had an interval of over 20 weeks between the dates of onset and treatment. The average interval for the 14 cases was 22 weeks.

Cases with emetine injections.—Out of 12 men who were cured by E.B.I. treatment 10 (80·3 per cent.) had an interval of over 20 weeks between dates of onset and treatment. The average interval for the 12 cases was 29 weeks.

Out of 14 men who relapsed after treatment with E.B.I. 11 (78·5 per cent.) had an interval of over 20 weeks between the dates of onset and treatment. The average interval of the 14 cases was 42 weeks.

Influence of Other Factors.

Vomiting.—Out of 46 cases cured by the keratin-coated tabloids 40 vomited during treatment—i.e., 87 per cent. The total number of days on which the 40 vomited was 285. The average number of vomiting days for those men who vomited gives a convenient coefficient for purposes of comparison—i.e., 7.

Out of 21 cases cured by the salol pills 14 vomited during treatment—i.e., 66 per cent. The 14 who vomited had 53 vomiting days—i.e., vomiting coefficient 3·7.

Out of 45 cases who relapsed after the keratin-coated tabloids 37 vomited during treatment—i.e., 82 per cent. The 37 who vomited had 333 vomiting days—i.e., vomiting coefficient 9.

Out of 18 cases who relapsed after the salol-coated pills 14 vomited during treatment—i.e., 78 per cent. The 14 who vomited had 63 vomiting days—i.e., vomiting coefficient 4·5.

Loss of weight.—Out of 46 men cured by keratin-coated tabloids 24 lost weight—i.e., 52 per cent.

Out of 21 men cured by salol-coated pills 7 lost weight—i.e., 33 per cent.

Out of 45 men who relapsed after keratin-coated tabloids 18 lost weight—i.e., 40 per cent.

Out of 10 cases who relapsed after salol-coated pills 5 lost weight—i.e., 50 per cent.

Effect of age on curative results.—The average age of 38 cases cured by keratin-coated tabloids was 27·6 years. 11 men out of the 38 were over 30 years of age.

The average age of 38 cases which relapsed after keratin-coated tabloids was 28·9 years. 11 men out of the 38 were over 30 years of age.

The average age of 17 cases cured by salol-coated pills was 28·7 years. 4 of the 17 were over 30 years of age.

The average age of 17 cases which relapsed after salol-coated pills was 28·4. 5 of the 17 were over 30 years of age.

Effect of age on vomiting.—36 men under 25 years treated with keratin-coated tabloids had 271 vomiting days—i.e., vomiting coefficient 7·5.

26 men over 30 years treated with the same tabloids had 157 vomiting days—i.e., vomiting coefficient 6.

7 men over 40 years treated with the same tabloids had 22 vomiting days—i.e., vomiting coefficient 3·1.

Conclusions.

The conclusions which we think may be drawn from the foregoing facts are as follows:—

1. (*a*) That "carriers" of *E. histolytica* who had not had any injections of emetine hydrochloride were cured to the extent of 78 per cent. by two courses of the salol-coated emetine bismuth iodide pills. (*b*) In the case of men who had had emetine injections 72·8 per cent. were cured by two courses of the salol-coated pills. (*c*) In the case of men who had not had emetine injections 70 per cent. were cured by two courses of the keratin-coated tabloids. (*d*) In the case of men who had had emetine injections 45·4 per cent. were cured by two courses of the keratin-coated tabloids.

The difference between the percentages in (*a*) and (*b*) are within the range of experimental error and need not be considered. But in (*c*) and (*d*) the difference is too great to be ignored. This difference may be due to variation in the quality of the keratin-coated tabloids, but such a defect would be common to both cases which had received injections of emetine and those which had not. It is generally admitted that certain "carriers" of *E. histolytica* are not cured by emetine in any form, and it may be, as Mr. Dobell suggests, that these cases become segregated in (*d*). It seems possible that the difference in the two percentages may be due to the injections of emetine rendering the "carriers" less liable to be cured by E.B.I.

For comparison with the above percentages of cures by a maximum of 72 grains of E.B.I. carried out in the special ward, we give the number and percentage of cures in the other wards of this hospital. The number of grains of E.B.I. which these cases received varied from 36 to 200. A case was regarded as cured after not less than 5 negative examinations over a period of not less than 5 weeks after the end of treatment. The last test was made at the Barton Convalescent Depôt. Out of 160 cases treated 142 were cured—i.e., 88·7 per cent.

2. There is no evidence that the length of time between the dates of onset of dysentery symptoms and the treatment has any effect upon the chances of cure by E.B.I.

3. There is no ground for the belief that the vomiting diminishes the chance of cure by the E.B.I. treatment. There is nearly as much vomiting among the cases which are cured as among those which relapse.

4. The age of the patient has no effect upon the chance of cure by the drug. But there is evidence to show that men over 40 years of age vomit less while undergoing treatment.

5. The salol-coated pills are a distinct improvement upon the keratin-coated tabloids from a curative point of view. They also cause less vomiting and loss of weight.

In conclusion, we express our hearty thanks to Temporary Honorary Captain A. C. Inman, R.A.M.C., Mr. W. O. Redman King, and Mr. A. G. Thacker for making some of the examinations for us and for help in many ways. To Lieutenant-Colonel T. H. F. Clarkson, R.A.M.C., officer commanding, Mont Dore Military Hospital, Bournemouth, we are indebted for permission to publish this report.

THE TREATMENT OF FUNCTIONAL CONTRACTURE BY FATIGUE.

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ONE of the most striking and obstinate of the objective disabilities displayed in the functional war neuroses is muscular contracture. The majority of the functional disorders met with are due to the absence or diminished activity of a normal function, and are easily and rapidly curable by suggestion and re-educative measures. Contractures, on the other hand, form part of a group of cases dependent not so much upon the absence of a normal function as upon its excessive and disordered activity. As a general rule, they are not very amenable to treatment by suggestion and re-education.

The object of this paper is to describe a method which the writer has used in dealing with this type of war neurosis. He has seen no reference to this treatment in the literature, and, as far as he knows, it has not been used by others. The advantage of the method is that once a diagnosis of functional contracture has been made no special experience is required in the carrying out of the treatment.

In the cases which have come under my care this treatment has invariably proved successful in the course of a few days, although most of them had been treated without benefit for long periods in various hospitals by other methods. The principle of the treatment simply consists in *producing a condition of fatigue in the muscles responsible for the contracture.* This is obtained by continuous passive movements in a direction opposed to the normal action of the contracted muscles. A good deal of force is often necessary in the early stages of the treatment, but as time goes on the spasmodic return of the muscles becomes slower and weaker until finally a limp, toneless, and fatigued condition is brought about. The offending muscles are then no longer able to produce the deformity for which they were responsible.

In the case of the more powerful muscles it may be necessary to continue the forcible movements for many hours before the condition of fatigue results, and relays of men must be "told off" to relieve each other, so that the muscles may get no opportunity of recovering their tone. In my own wards I have been in the habit of getting patients to assist in the work, and in particular I find it helpful to make use of those who have themselves been cured by the same kind of treatment.

It is always my custom carefully to explain matters in the simplest language to the patient before commencing the treatment. I describe to him the nature of a spasm and tell him that once it is relieved he will be able to bring into action opposing muscles which are now unable to perform their functions on account of this persistent spasmodic contraction.

Illustrative Cases.

It will be seen from the description of the cases given below that many of them have been suffering from these contractures for a great length of time. Almost every case has

been treated by one or all of the following methods: fixation in splints, electricity, passive movements, and suggestion with or without hypnosis. In some cases the fixation had been effected under general anæsthesia.

CASE 1.—J. D., aged 28. Had been fighting in France from August 18th, 1914, and had twice previously been wounded. On July 14th, 1916, he was wounded a third time, a machine-gun bullet going through the fleshy part of the left forearm. The hand immediately became clenched and continued so after the wound had healed and the dressings had been removed. The fingers could be forcibly opened, but became clenched again immediately they were released. He was treated by electricity, massage, passive movements, and fixation for weeks together in a straight splint, but up to the time of his admission to Maghull Military Hospital on April 18th, 1917, no improvement had resulted.

Two days after admission treatment was begun. The condition was thoroughly explained to the patient and he was told that after fatiguing the flexor muscles to such an extent that they would no longer be able to pull the fingers into the clenched position the antagonistic muscles on the back of the forearm would be able to perform their work. The second stage of the treatment then followed. For six hours without interruption the fingers were forcibly opened and opened again directly they closed into the palm of the hand. After a few hours the fingers returned more and more slowly, till at last they remained straight out in the extended position.

The following morning the fingers were still straight out and the condition of spasm has never returned. At first the extensor muscles were very feeble in their action, but improved daily. When discharged from hospital on July 2nd, 1917, the patient's hand was as strong and useful as it ever had been.

CASE 2.—J. D., aged 20, was wounded by a rifle bullet on July 10th, 1916, the bullet going through the fleshy part of the back of the neck. The wound healed satisfactorily, and the patient was discharged from hospital on Oct. 1st, 1916. Two weeks after returning to his depôt there was a Zeppelin raid, and the troops were turned out in the middle of the night. In the morning his neck was found to be twisted round and bent over on to his left shoulder. After treatment in various hospitals for several months, fixation in the corrected position by plaster of Paris was resorted to, but the deformity returned immediately the bandages were removed.

The patient was admitted to Maghull on April 18th, 1917. There was strong spasm of the left trapezius and right sterno-mastoid muscles, causing the neck to be drawn down on the left shoulder and rotated. The deformity was easily corrected under hypnosis, but the condition returned. A week after admission the neck was forcibly straightened, and straightened again as fast as it returned to its old position. After some hours, the offending muscles were in a condition of fatigue, and the neck remained straight. The following morning a slight return of the deformity was noticed, and the procedure of the previous day was repeated. From that day the neck remained straight and the condition did not return. The patient was discharged from hospital on July 2nd.

CASE 3.—F. C., aged 27, was wounded in left forefinger on July 18th, 1916, by machine-gun bullet. Again wounded on Feb. 18th, 1917, on back of right knee by piece of metal, and remained for 36 hours in a shell hole before being picked up. A few weeks later he noticed that he was unable to use the left hand, and a note on the medical history sheet, dated March 24th, states that the hand was in a position of "main en griffe." He was admitted to Maghull Hospital on June 6th, 1917. Two days after admission the fingers were forcibly straightened as in Case 1. After some hours the deformity failed to return, and from that time onwards the hand has not come back to its abnormal position.

CASE 4.—C. M., aged 32, was buried by a shell on August 2nd, 1916. He was not wounded, but was extensively bruised about the back. He remained constantly in bed till February, 1917. Up to that time any attempt to move his legs brought on severe tremors. He was then allowed up and efforts were made to get him to walk. However, any attempt at walking involved kicking one foot with the other. As a result of this his ankles became so bruised that it was necessary to pad his feet with cotton-wool.

On admission to Maghull on June 12th, 1917, it was noticed that one leg was crossed over the other and that the adductor muscles of the thigh were in a state of spasmodic contraction. More especially was this the case on the right side. The thighs could not be separated without using a good deal of force. Obviously this spasm had to be reduced before walking could be attempted.

The patient was laid on his back and the thighs were forcibly separated, each leg being pulled by a man. The separation was repeated as quickly as the thighs met again. Three days' hard work of four hours a day were necessary before the spasm was fully reduced. On the fourth day the patient was able to walk with assistance. On the sixth day he walked a distance of over a mile without help and the spasm has never returned.

CASE 5.—W. H., aged 37, was knocked over by a bursting shell in September, 1916. For some months he was unable to walk or even to stand, there were general tremors, and his left foot was fixed in a position of marked flexion. On admission to Maghull on Dec. 20th, 1916, he could not walk without assistance, the sole of the left foot was drawn up by spasmodic contraction of the flexor muscles of the front of the leg, and his weight when treading on the left foot was borne entirely on the heel. He was treated by repeatedly extending the foot against the resistance of the contracted muscles. After some hours the spasm of the flexor muscles disappeared and the foot could be moved without resistance as desired. He quickly walked quite naturally and was discharged on May 11th, 1917.

CASE 6.—E. M., aged 29, was wounded by a rifle bullet on June 4th, 1915. The bullet entered through the intraspinous fossa of the right scapula and passed out through the pectoralis major just internal to the head of the humerus. The patient stated that an operation was performed for joining the nerves two months later and that the wound became septic, necessitating further operations for the purpose of drainage. Note in medical history sheet states: "Since August, 1915, the arm has been fixed to the side and every attempt to move it evokes strong muscular spasm. The elbow is extended by contraction of the triceps. For a long time the fingers were tightly flexed and the wrist extended, but this condition cleared up in March, 1917, only to recur in May." A further note, dated June 8th, 1917, states: "Electrical massage gives free movement, but spasm returns in half an hour.

The patient was admitted to Maghull on June 12th, 1917. The arm was tightly held to the side. It could be forcibly abducted but sprang back like the blade of a clasp knife, on being released. The arm was held rigid by the triceps muscle and the elbow could not be voluntarily flexed; there was, however, free movement of the wrist and fingers.

Treatment was begun three days after admission. At first the elbow was forcibly flexed and this operation was repeated for some hours until at last all trace of spasm had disappeared. The following day, the forearm being still freely moveable at the elbow, the arm was forcibly abducted and this movement was repeated again and again until after some four or five hours the limb could be held voluntarily away from the body. A good deal of force had to be used at first; so much so, that it was necessary for one man to steady the body while another forced the arm away from the side. This forcible abduction of the limb from the body was repeated day after day till at the end of the week the patient was able to lift his hand to the back of his head, all trace of spasm having disappeared.

CASE 7.—T. W., aged 24, was buried by a shell in February, 1915. He was unable to walk, had general tremors, and was kept in bed for about four months. On getting up it was noticed that his feet were strongly inverted, so that on standing all his weight rested on their outer edges. An attempt was made to correct the deformity by means of splints, but the condition was quite unimproved at the end of three months. Strong faradic currents, massage, and passive movements were then tried but with equal lack of success. Finally, he was fitted with special boots designed to tilt the foot over into the correct position by means of leather wedges. The condition, however, still remained unimproved.

The patient was admitted to Maghull on Nov. 18th, 1916. On admission the feet were strongly inverted and a good deal of force was necessary to straighten them. He walked on the outer edges of his feet with the help of two sticks. He was treated by exercises, passive movements and suggestive and re-educative measures. He improved up to a certain point, and after some months he could get about without the help of sticks. The condition of "claw-foot," however, still persisted, although not to the same marked extent as on admission.

Treatment by fatigue was commenced at the end of June. For eight hours without intermission the feet were forcibly flexed and everted. At the end of this time the deformity had entirely disappeared, but returned to a slight degree the next day. Another sitting of eight hours effected a complete disappearance of the spasm, and the contraction has not returned. He now walks on the flat of his feet and his gait is perfectly normal. He was discharged on July 20th, 1917.

CASE 8.—A. W., aged 27, was wounded on Oct. 22nd, 1916, by a shrapnel bullet which went through the fleshy part of the back of the left forearm. The hand immediately became clenched, and remained so, although the wound healed satisfactorily. For four months the fingers were kept straight by means of splints, but every time they were taken off the contracture returned.

On July 5th, 1917, he was sent to Maghull. The fingers were tightly clenched and had obviously not been opened for many weeks, for when forcibly straightened the skin on the palmar surface of the hand and fingers was found to be in a sodden condition and emitted a most offensive odour. A good deal of force had to be used to get the fingers open, partly owing to fibrous adhesions along the course of the flexor tendons, and they contracted into the hand again directly they were released. Repeated forcible extension was persevered with for many hours for two consecutive days. At the end of this time the fingers remained out limp in the extended position and the contracture has not returned.

Some General Considerations.

This form of treatment follows the lines of the general methods employed at Maghull. The nature of the disability is explained to the patient and he is made to understand the curative measures as they are carried out. That this is a distinct advantage there can be no question, for not only can the patient in many cases coöperate in his own cure, but he in his turn helps later on in the treatment of others. Thus a curative atmosphere is developed in the ward, the value of which it is impossible to overestimate. (See *Note* at end.)

Further advantages of the treatment are:—

1. No apparatus of any kind is required and no specialised knowledge on the part of the physician is necessary.

2. It is accessible to all, since the personal influence of the physician does not operate to the same extent as in treatment by purely suggestive methods. That such personal influence must come into play to some degree cannot be denied, for although the patient's cure is brought about in the first instance by a purely physical means, psychical factors must operate once fatigue has worn off. It is probable, however, that the all-important factor which conduces to the permanency of the cure is the actual demonstration to the patient that the contracture no longer exists, it having been dispersed by a method which he has no difficulty in understanding.

3. It is applicable to cases which have been treated previously without success by other methods, and its success is not prejudiced by these previous failures. It therefore appears to be preferable to suggestive measures.

4. The process by which the contracture is actually eliminated is a physiological one and is not subject to interference from psychical factors—e.g., the degree of the patient's faith that he will be cured.

5. Any fear of a relapse is distinctly reduced by the patient's knowledge both of the mechanism by which the disability was produced and of that by which he was cured.

6. Such a method does not undermine the patient's self-respect in the slightest degree; in fact, in most cases it may increase it by deepening his self-knowledge and convincing him that his disability is a natural phenomenon and not something occult.

Cases 6 and 7 are of special interest in that they had both been in hospital for more than two years before treatment by fatigue was resorted to. In each case the disability was cured in less than a week.

I am told that the condition called "claw-foot" is the most common of the contractures met with in this war, and that it is particularly intractable. Many are sent out of hospital fitted with an "inside splint," and remain for months or even years with little or no improvement. It seems highly probable that such cases could be cured in a few days by the method above described.

The idea suggests itself, too, that this method might be applicable to those contractures met with in civil practice in the grave forms of hysteria.

Objective and Subjective Symptoms.

As this paper deals only with the treatment of muscular contracture, no mention has been made of any accompanying subjective symptoms. Such troubles, however, were present in more or less marked degree in all the cases. It is very doubtful if a hard-and-fast line can be drawn between "subjective" and "objective" symptoms.

From the physician's standpoint it may be easy, but to the patient it may matter little whether his trouble expresses itself to others through a physical symptom or is known only to himself. In fact, the distress caused by the "subjective" is often greater than that due to the "objective" troubles. Doubts, fears, hesitations, obsessive thoughts of all kinds often oppress the patient who *seems* to be suffering merely from muscular contraction. To allay these is the physician's plain duty. Indeed, the future may show that in the causation of these "objective" troubles psychical influences have played the major rôle, and until investigation has cast more light upon this fascinating problem we must not speak too hastily of purely "objective" symptoms. Attention should always be paid by the physician to the individual history of the case, and especially to the way in which the patient himself regards his trouble. If this is done, not seldom will the patient leave hospital a wiser and stronger man in that he knows himself better.

The fundamental principles underlying the form of treatment above described have not been discussed. It is hoped, however, that the whole subject will be elaborated in greater detail in a subsequent communication. In conclusion, I wish to express my thanks to Major R. G. Rows, officer in charge of the Military Hospital, Maghull, for permission to publish these notes.

Note.—It may be pointed out that this curative atmosphere is of the greatest help to the physician in his treatment of the purely subjective troubles met with in the psycho-neuroses. It is sometimes forgotten that "psychical infection," which is so much feared by those who deprecate the treatment of neurasthenics in special hospitals, often has a beneficial effect, in that patients who are getting better are able to convince others suffering from similar troubles that their own cure will come about in due course.

MEDICAL FEES UNDER THE MIDWIVES ACT.—After consultation with the Central Midwives Board the Local Government Board for Scotland has fixed the following scale of fees for medical assistance in case of emergency to be paid by local supervising authorities to medical practitioners under Section 22 (1) of the Midwives (Scotland) Act, 1915:—(*a*) Fees to medical practitioners, covering one subsequent visit: For major operative interference, £1 1*s.*; for special anæsthetist, if required, 10*s.* 6*d.*; for minor operative interference—*e.g.*, suturing the perineum: day, 7*s.* 6*d.*; night, 15*s.*; for all other cases: day, 5*s.*; night, 10*s.* 6*d.* A day visit is construed as occurring between 9 A.M. and 9 P.M. (*b*) Mileage rates (per double mile): Normal mileage—i.e., distance between practitioner's residence and patient's residence along a driving road, 1*s.*; special mileage—i.e., distance between practitioner's residence and patient's residence along a path or road not used for vehicular traffic or across moorland, 2*s.* 6*d.*; water mileage—i.e., distance by sea or loch between the points of embarkation and landing, having regard to the length of an average voyage, 4*s.* Where the patient's residence is within a mile of the practitioner's residence no mileage fee is to be charged.

ACTIVE TREATMENT IN ESTABLISHED ECLAMPSIA.

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IN this paper I propose to confine myself to the active treatment of the fully-established condition.

Methods of treatment had best be considered under two headings, palliative and radical or operative, and naturally we have a much wider range of choice in the former than in the latter class. As a palliative measure sedatives are urgently indicated; this point is agreed on by all. Morphia is probably the best, and is certainly one of the best of these, but it must be properly used; Bumm and Jardine, however, are averse to its use. I have found the following a safe and efficient method of administration: as soon as possible after the case comes under observation give gr. ½ as an initial dose, if necessary, give another gr. ¼ in two hours' time, and if necessary repeat the smaller dose in another two hours, but give no more than the three doses. Mostly a satisfactory sedative result is obtained; if not, more radical measures will be necessary. If used carefully as described I have never seen any harmful results accrue from its administration, nor have I ever seen any evidence of its supposed damaging effect on renal tissue. Chloroform is most valuable as a sedative, although such authorities as Tweedy and Ward are strongly opposed to its administration. They hold the drug responsible for harmful hepatic lesions, and liken its administration to that of an antipyretic in a case of fever. It is best as an adjuvant to operative treatment; if administered in big doses and over a long period it is certainly deleterious, and then may cause liver lesions very similar to those found in established eclampsia. Therefore in giving it give as little as possible to produce the sedative effect aimed at. Chloral hydrate with potass. bromide are of more use for general restlessness between fits than for actual convulsions. I have never seen any real sedative effect from these drugs alone in eclampsia. Paraldehyde, on the other hand, I have always found sound and absolutely safe. Two drachms rectally, with repetition of half that dose if necessary at two-hourly intervals, is usually as efficient as the largest dose of morphia, and is without any of the contra-indications of that drug. I am strongly of opinion that paraldehyde has not yet reached its proper place in professional estimation.

Great attention is to be paid to the general surroundings of the patient: make only one and that one a complete pelvic examination, then leave the patient in peace, lest by unnecessary pelvic stimulation fresh fits be set up.

In general terms, then, exclude everything acting unduly on the visual, aural, tactile, or other receptor systems and the attaining of these desiderata will include good nursing, a suitably warmed and darkened room, and experienced attention. Stroganoff, of Petrograd, has of late perfected sedative treatment; space forbids a full account of his methods, but by paying attention to all these factors and details in recent years he has managed to reduce his death-rate to 6 per cent., which is quite a wonderful figure, and other obstetricians who have followed the details of his treatment also quote much improved results. Some writers recommend circulatory sedatives and vaso-dilators, as hæmorrhages in various organs are of such frequent occurrence in this disease, but I have never used them, as they can have no important place in treatment. Zinke uses veratrum viride and speaks well of it, while hydrate of amyl is used by Härle and others with improved quoted results, but my personal opinion is as stated.

Elimination must play a large part in any system of efficient treatment: the stomach and bowel must first be thoroughly washed out and then a hydragogue purgative administered. In this respect mag. sulph., grs. 60 daily, or pulv. jalap. co., grs. 90 as required, will be found the most efficient; croton oil I have found disappointing and of little purgative value in these cases, while Jardine has reported a case where œdema glottidis followed its exhibition. By these means the alimentary tract—a possible source of toxin manufacture—can usually be satisfactorily cleared out. Diaphoresis usually gives excellent results, but the pulse

must be watched, although I have never seen any collapse during this. The hot pack or hot-air bath are the most useful agents in the matter.

Now the toxic substances are circulating in the blood, and by withdrawing a certain amount of blood a certain amount of toxin will be abstracted, while if fluid be introduced to replace the abstracted blood the remaining toxin will be diluted and at the same time the kidneys stimulated to more active excretion. These conclusions have been substantiated in practice and in a case of normal severity 15 to 20 fl. oz. of blood may safely be withdrawn from a median basilic vein, while at the same operation 2 to 3 pints of normal saline may be introduced into the vein.

Jardine and others at first used sod. acet. on account of its supposed diuretic action, but they quickly found that normal saline was just as effective. Generalised œdema is usually held as a contra-indication to transfusion, but I have not found it so; however, œdema of the lungs certainly is, and with such a condition present saline should certainly be withheld lest the œdema be accentuated and the patient literally drowned. If the case be less urgent the rectum will be found a most useful channel of administration. I have no doubt as to the efficacy of this line of treatment, and I have seen rapid and great improvement in almost every case in which it was tried, and certainly in every case of moderate severity. These are the main lines of sedative treatment as at present practised, and we can now consider the more radical or operative methods and the indications for their application.

Before discussing the commonly employed forms of operative treatment, I shall remark on certain procedures which have never become popular mostly for reasons which will be obvious. Renal decapsulation, the first of these, was introduced by Edebohls, and has at times been practised and recommended by various American and European obstetricians of repute. It aims at relieving renal congestion, but as this is only an accompaniment and certainly not a cause of eclampsia its basis is obviously unsound. It is typically an operation which is likely to do far more harm than good: I have never seen it performed, and never intend to perform it personally.

Sellheim's operation of amputation of the breasts (the supposed place of origin of the causative toxic substance) must rely on the accompanying loss of blood for any good that may ensue. It is a farcical procedure, and is not seriously regarded at the present day. To empty the uterus, however, is the keystone of our operative efforts, and is a most rational procedure. A safe rule in practice is this: unless a case of eclampsia be showing immediate, speedy, and considerable improvement by palliative treatment, empty the uterus at once. Consider only the mother's interests, and entirely disregard those of the fœtus. Bumm quoted 30 per cent. mortality with expectant treatment, but since 1901 he has delivered as soon as possible after the first fit, and now reports a mortality of 2 per cent.—truly a changed figure. Most obstetricians will agree with me in recommending this line of treatment, although Ballantyne and Stroganoff, amongst others, still advocate expectancy. In most cases labour will have set in, and if so, the uterus may be left to empty itself, possibly with the help of forceps; but unless some strong indication be present—e.g., extreme collapse—no rough method of haste must be employed. However, if dilatation be too slow, and the eclamptic condition becoming worse, operative cervical dilatation is called for.

Forcible dilatation by hand or by Harris's dilators must be done if at all only with very great care, as so much operative shock is caused by such a procedure. In such a case I strongly recommend incising the cervix; the accompanying loss of blood is of benefit and full dilatation is immediately secured. Again, any necessary intra-uterine manipulation may now be proceeded with; of these latter version and forceps will be the most often called for, and version will be indicated, especially when speed is required—e.g., when a fœtal heart be heard.

When the uterus is emptied as described, and unless the case be very grave and far advanced, immediate and continuous improvement will be noticed and recovery will be rapid, contrasting strongly with the uncertain and anxious state of affairs when purely expectant treatment is relied on. Cæsarean section has been employed in only a few cases to empty the uterus, and the cases are too few and the results too uncertain yet to speak definitely of it. The maternal mortality is roughly about 50 per cent. in published cases, so that *prima facie* the operation does not recommend itself. Unless for mechanical reasons—e.g., contracted pelvis—I can see no prospect in performing the operation for eclampsia.

These, then, are my conclusions regarding the active treatment of eclampsia; I present them in no dictatorial spirit, but merely as the result of recent clinical observation and study.

Cardiff.

TWO CASES OF GUNSHOT FRACTURES OF THE MANDIBLE WITH LOSS OF SUBSTANCE.

BY RICHARD J. GREEN, L.D.S. ENG.

THE necessity for efficient treatment of fractured jaws grows more urgent every day. Deformity of the face means, in many cases, unhappiness, but is, together with an impaired masticating action, nearly always avoidable. The treatment is, in most cases, better left to the dental surgeon, who, by his training, is particularly adapted to make use of mechanical appliances to achieve the best result, and knows the great importance of correct articulation.

I wish to emphasise this most strongly, because during hospital practice and work with the South African Field Forces I have so often seen bad results due to lack of special training on the part of the general surgeon.

Too often in busy hospitals the old four-tailed bandage is made to serve, and wiring of the jaws, so much practised by the general surgeon, often ends in the "open-bite," or leaves the mandible considerably deflected to one side or the other, altering the appearance of the patient. It is in war-time particularly that the dental surgeon should be encouraged by having many hospitals for gunshot fractures of the jaws only. This field of surgery is a small one and the manipulative skill of the dental surgeon is high.

CASE 1.—Private ——, aged 18. *History:* The patient was hit by a machine-gun bullet at the close range of nine yards on April 18th, 1915. The bullet passed through the mandible immediately behind the mental foramen on the right side, carrying away a large piece of bone and causing much splintering. It struck his teeth with force, and in its deflected course carried away the crowns of all his teeth (with the exception of the right upper and lower wisdom), the anterior third of his tongue, his superior maxillary bone on the left side, and the corner of his mouth, together with a piece of cheek. He lay partly unconscious for nine hours, was taken to a base hospital, and a four-tailed bandage was applied. He was sent to England 12 days afterwards, on April 30th. On admission the condition of his mouth was very bad. He had a swollen tongue and lips, an extremely sensitive upper jaw, and the exposed pulps of many teeth all bathed in a pool of pus. He was nervous, but otherwise in fair condition.

First operation (six weeks after admission, June 11th).—(It will be seen that no form of wire splint attached to teeth was possible: he had no teeth, and no splint in the form of a Gunning could be used, because half his superior maxilla had been shot away and was extremely sensitive.) I decided to plate the lower jaw with silver No. 8 plate and fasten it in position with three silver-plated brass screws. The plate was 1½ in. in length, shaped rather like a cradle, but open at the ends, ¾ in. high on the buccal surface, but only 1/16 in. on the lingual (Fig. A). The screws were ¼ in. long and of a very small gauge. During the operation I removed some large sequestra and fibrous attachments. The mandible was considerably deflected downwards and to the right side. I applied a little pressure and forced the jaw into correct position. By means of a cable attachment to a small electric motor, and using spear and rose-head burs, I drilled the necessary screw-holes into the jaw bone, avoiding the inferior dental canal, and fastened the plate in position, which firmly held the fractured ends. He was a lively patient, so the sister in charge suggested a further protection in the form of a chin and jaw frame of perforated wire gauze, edged with rubber strapping

FIG. A.

Plate seen from the lingual side.

Second operation (August 25th, 1915).—I removed the plate and his "middle line" had been preserved, which is my chief reason for reporting this case, as I do not think by any other method it could have been successful. I extracted all the roots of his teeth one week afterwards, and freed the upper lips of its cicatricial attachment to the alveolus, thus making a false sulcus.

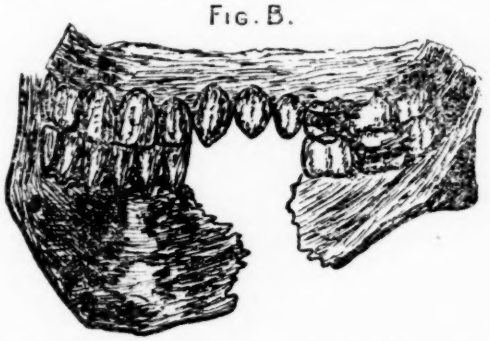
In December, 1915, he complained of pain in his left maxilla. I found he had suppuration of his left antrum of Highmore. I opened it under novocaine, and packed with gauze dipped in tincture of iodine, B.P. strength. This was left for 48 hours and then removed. After syringing for seven days with glyco-thymoline it was allowed to close and all discharge ceased. Of 17 cases of suppuration of the antrum of Highmore this case cleared up soonest. I believe this method should always be tried first before tubes or something more radical is attempted.

Six months after the extractions the dentures were inserted, but as the patient complained of a tingling sensation on the right side of the mandible I opened up the inferior dental canal under novocaine, injected cocaine into it, dragged the nerve outwards without causing pain, and cut off half an inch; the tingling sensation did not recur. He was discharged in March, 1916.

CASE 2.—Private ——, aged 19. (Wounded April 18th, 1915.) *History:* A bullet at a range of 150 yards struck the lower part of the thorax on the left side, passed upwards, apparently without injury to his lungs, and came out near the middle of his left clavicle. It then struck his mandible (probably broadside on) in the region of his premolar teeth, carrying away 1½ in. of bone, entered his mouth and passing over his lip, without causing injury, was caught in his hand. On admission (April 30th, 1915) there was a large sinus, a copious discharge of pus, no pain, and the jaw was very much deflected downwards and to the left side.

Method of attaching appliance.—Four "Angle bands" were attached to the patient's 12-year lower molars and 6-year old upper molars as in Fig. B. These bands are gold

FIG. B.



Angle bands in position, with stud, screw, and nut; figure-of-8 wire ligatures attached; similar bands on opposite side of jaws.

plated, with nut and thread for tightening purposes and with a stud to which one can attach ligatures. To the studs I attached a figure-of-8 wire ligature on each side of his jaws, and using pressure held the jaws in proper position—the teeth intercuspidating—tightened the ligatures, and kept the jaws closed in this position for ten weeks. The patient was fed with liquid diet through the space left by his left lower canine and premolars which had been carried away. Many sequestra worked out, the sinus healed, and strong bony union took place; no shrinkage occurred after the removal of the bands, his teeth intercuspidated, and his middle line was correct.

Had I wired the jaws in this case I think it probable that the fine splintered pieces in contact would have been disturbed and fibrous union would have resulted.

Bandaging, wiring, and fastening teeth together by means of ligatures tied to adjoining teeth are crude relics of the past; the general surgeon has no facilities to avoid these methods.

Sunderland.

PROFESSORS IN INDIAN MEDICAL COLLEGES.—The educational conference recently held at Bombay decided to urge the Indian Government to select professors for the Government medical colleges from the entire medical profession in England and India outside and inside the services. A resolution was passed advocating the necessity of an adequate system of research scholarship to be started and maintained by the Government for the advancement of scientific knowledge.

THE EFFECT OF X RAYS UPON DISEASES OF BACTERIAL ORIGIN.[1]

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DURING recent years there has been an increasing application of the X rays as a means of treatment of diseases of bacterial origin both superficial and deep-seated, with results which have in many cases been surprisingly successful; cases which had under other methods of treatment either become worse or had not improved at all making a rapid recovery. This has naturally led to an inquiry as to the reason of the improvement, and consequently as to whether the X rays possessed any specific germicidal action.

Close observation and examination has led to some complexity of opinion upon this point, some observers being of the opinion that the X rays do not possess any such power, whereas others are equally of opinion that the germicidal action of the rays is undoubted. It would be difficult to find opinions more diverse than these, but, nevertheless, the adherents to each of these conclusions have some good reason for their assumption. Those who declare that the X rays are non-germicidal bring evidence to show that germs which were present before irradiation are still there after that operation, and those who are of opinion that the rays possess a decided germicidal property give equally substantial evidence in support of their contention by producing cases which have become sterile of the infecting micro-organisms after treatment.

Upon the principle that there is no result without a cause, there must be some good reason why evidence so contradictory can be produced, for it is certain that investigation upon thoroughly scientific lines has led to the conflict of opinion, and it appears probable that the investigations have been made in different directions. The one set of investigators have based their claims upon findings made as the result of experiments and observations of the action of X rays upon bacteria in *inert* or dead *media*, whereas the other set have based their claims upon the result of the action of the rays upon micro-organisms in *living animal tissues*—a distinction of the utmost importance and one which will reconcile these opposite opinions and prove them both to be true.

It will therefore be interesting to inquire into the effect of X rays upon bacteria first in *inert media* and then in *living animal* tissues. We shall then see that the action of X rays upon bacteria in inert media is not germicidal, and we shall also see that the absence of bacteria in living animal tissues after irradiation is not due to the lethal action of the X rays but to the stimulation of the living animal tissues leading to increased phagocytosis and so to the disappearance of the micro-organisms, but that the phagocytosis is materially aided by the action of the X rays upon the bacteria.

Results of Experiments.

To this end we will now inquire into a few experiments.

If fresh plate cultures of tubercle bacilli be exposed to the X rays in such manner that one-half of the culture plate be protected from the action of the rays by means of a lead sheet, it will be found that upon the portion of the medium covered by the lead growth of the bacilli will have taken place, whereas upon the exposed half no such growth will be evident, although the bacilli placed there will still be present. Again, if developed colonies of bacilli be exposed to the X rays they will not be destroyed by the exposures, but no further development will take place.[2]

It is evident from these experiments that the micro-organisms are not destroyed by the rays, but that their growth is stopped, and it has been found impossible by any ordinary long exposure to high vacuum tubes to kill growths of bacilli by X rays.[3]

Bergonié and Mangour demonstrated that they were unable to destroy the virulence of tubercle bacilli by exposing sputum containing them to the X rays, for after an exposure of six hours to the rays at a distance of 20 mm.

[1] A paper read before the London Dermatological Society.

[2] Münch. med. Wochenschr., 1898, xlv., 773; 1902, xlix., 402.

[3] Compt. rend. Soc. Biol., 1897 (Série 10), iv., 689. Archives Röntgen Soc., 1900, v., 3.

from the tube the tuberculous sputum when injected into guinea-pigs caused acute miliary tuberculosis in all the animals injected.[4]

This subject has claimed the attention of many bacteriologists, and from the results of their work there is undeniable proof that the X rays themselves have no germicidal properties and that the germicidal influence of the X rays themselves upon the bacteria is practically nil. We have thus seen that the germicidal action of the X rays upon bacteria in inert cultures is practically negative; the effect of the rays upon micro-organisms in living animal tissues, however, is quite different.

Pusey and Caldwell[5] say that when a suppurating ulcer is exposed to the X rays unmistakeable evidence of interference with the growth of the pus organisms is shown. The discharge changes from pus to a sero-purulent and then to a sero-fibrinous fluid, and soon the ulcer becomes clean and free of contamination with pus organisms. This drying up and cleaning of infected ulcers has been noted by many observers, and it occurs regardless of the character of the ulcer, dirty septic ulcers of carcinoma, syphilis, and lupus become clean and sterile under the influence of X rays alone without the use of antiseptics in localities where cleanliness cannot be maintained; it is, therefore, clear from this cleaning process that the micro-organisms responsible for the septic conditions have been destroyed as a result of the exhibition of the rays to the living animal tissues.

In order to demonstrate the effect of tubercle bacilli in living animal tissues, experiments were made upon eight guinea-pigs, which were inoculated in the inguinal region with tubercle bacilli. Three of them were then exposed to the X rays, and all three remained well, whereas the five guinea-pigs which were not exposed to the rays all developed tuberculous diseases at the point of inoculation.[6]

Pusey and Caldwell have emphasised the fact that organisms can be destroyed by exposures to X rays when situated in living animal tissues, whereas the same organisms in inert cultures are not destroyed by the X ray exposures, proving that it is not the influence of the X rays themselves that causes their destruction, but that the living tissues, doubtless under conditions of activity excited by the X rays, play an important part in this germicidal process, and that it may well be imagined that this process is in the nature of stimulation of the cells, which are rendered thereby better able to take care of themselves against the invasion of the organisms, and that this effect on bacteria is caused by increased phagocytosis.

Conclusions.

It might well be said that if the increased phagocytosis is due to increased stimulation of the tissues, what proof is there that the X rays play any part different from that of any other stimulant applied to the region? The answer is that if tuberculous glands, such as are commonly met with in the cervical region, be subjected to the influence of the X rays, they will in course of time atrophy and become sterile of tubercle bacilli, whereas glands of a similar nature exposed to stimulation of other kinds, such as fomentations, poultices, iodine, &c., do not atrophy and become sterile, but rather increase in size and bacillary virulence.

We thus see that the phagocytosis, encouraged by the applied stimulation, is not alone sufficient to prevent infection; it follows, therefore, that the X rays must play an important and specific part in the prevention of the infection by and in the destruction of the bacilli.

We found that when the tubercle bacilli were exposed to the rays they did not form colonies, and we also found that developed colonies exposed to the rays did not grow, that the bacilli were not destroyed in either instance, but that their increase and multiplication had been inhibited.

This, then, is the reason why inoculated guinea-pigs when subjected to the influence of the X rays do not develop tuberculous lesions. The phagocytes are equal to the task of destroying the germs inoculated into the animal if the germs are deprived of their power of rapid reproduction, but if their reproductivity is not inhibited the phagocytes are unequal to the task of dealing with the ever-increasing invading forces.

We may therefore conclude that the effect of X rays upon diseases of bacterial origin is that they have not any germicidal powers, but that they have a decided inhibitory effect upon the reproduction and increase of the germs, and that they produce stimulation of the living tissues leading to an increased phagocytosis, which is capable of destroying an unreproductive colony of micro-organisms.

Harley-street, W.

[4] Bull. Acad. Med., 1897 (Série 3), xxxviii., 66.
[5] Pusey and Caldwell: Röntgen Rays in Therapeutics and Diagnosis, 1904, 290.
[6] Semaine Médicale, 1896, xvi., 266.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON THE REFLEXES IN TETANUS.

BY A. G. GIBSON, M.D. OXON., F.R.C.P.,
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THE deep and superficial reflexes are an index of the degree of spasticity in the particular group of muscles concerned in the reflex. Elicited with certain precautions the briskness of these reflexes affords considerable assistance in the diagnosis of nervous disease. In tetanus they can be similarly used to ascertain the progress of the disease. The muscular reflexes in tetanus tend to be increased in the part affected, and in the more highly spastic muscles clonus can be obtained provided the antagonisers are not in spasm. We know that the chief method of the spread of the toxin is upwards to the spinal cord by means of the lymphatics of the nerve-sheaths near the wound, and it is possible by means of daily estimation of the reflexes to demonstrate how the different groups of muscles become affected. One group of muscles near the area affected may show an increase or diminution of spasticity according as the disease is increasing or decreasing in intensity. Thus in one case under treatment with a wound of the right arm the knee-jerks on a certain day were both markedly increased, but much more so on the side of the wound. Three days later the jerks were still brisk, the right, as before, being brisker than the left, and patellar clonus previously absent was elicitable in both legs. Six days after both jerks were equal and normal, and there was no clonus. In another case with tetanus beginning in the muscles of deglutition the triceps and biceps jerks on the right side were increased over the left. Many other instances of this might be quoted.

Another reflex of importance is the jaw-jerk of the masseter muscle; this is elicitable in all cases where the jaws are moderately stiff, but not in those with tensely closed jaws. It can be elicited, as far as my experience goes, at some stage of all cases of tetanus, even in local tetanus of a mild grade affecting a lower limb.

The clinical points about these reflexes which need to be borne in mind are these: The jaw reflex is not usually obtained in normal persons. The arm-jerks are usually absent, but may be present in neurotic patients. The reflexes are equal on the two sides. Clonus—i.e., true clonus—when the contractions increase in intensity, is an abnormal phenomenon.

The value of a careful examination of the reflexes lies first as a means of confirming the diagnosis, especially in a case of local tetanus. Such cases are not always easy of diagnosis when one has to take into account the possibility of reflex immobility due to deep suppuration or from implication of a joint, especially the hip-joint; and under conditions now prevailing the tetanus inspector is rightly called upon to advise on the least suspicion of the disease; but if with a local spasm of a muscle or a group of muscles another group not in the same region shows increase of tone a diffusible toxin may reasonably be inferred to be acting in the body. Its second value lies in the fact that the treatment by antitoxin can be controlled by the effect on the neuro-muscular apparatus. Whether or not to give antitoxin by the intrathecal route on the third, fourth, or later day of the disease, involving as it does a general anæsthetic, is not always easy to decide. It may be determined by the general condition of the patient who, if comfortable and without any tendency to spasm, might be left till the next day. My experience is that there is no relation between the condition of the patient as regards his comfort and the state of his reflexes. Daily vigorous antitoxin treatment alone will cause the muscles to relax, and even under daily intrathecal injections of several thousand units the reflexes may increase, and the jaw reflex which previously had been absent may appear. My rule of treatment, therefore, is to push the antitoxin treatment by the intrathecal route until the reflexes begin to show normal reactions.

Oxford.

AN UNUSUAL FORM OF HYPOSPADIAS.

By T. J. THOMAS, L.M.S.S.A.,
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THE following curious case seems worthy of record :—

A. B., aged 19, came to the sick bay complaining that he had a urethral discharge and pain on micturition. On examination he was found to be suffering from acute gonorrhœa. He was also found to have rather an unusual form of hypospadias glandis. The urethral orifice occupied the position normally occupied by the frænum, looking downwards instead of forwards, but the prepuce was much smaller than is usually found in this condition. There was a very small meatal ingrowth ending in a cul-de-sac representing the fossa navicularis at the site of the normal urethral opening. In addition to the above opening there were two smaller pinhole openings situated symmetrically about one-eighth of an inch to either side of it. On probing these two smaller openings they were also found to end in culs-de-sac, having no communication with anything and being about one-tenth of an inch deep.

The gonorrhœa in this case was found to be very difficult to treat, the discharge repeatedly recurring after the patient had been sent to duty, apparently cured. On closer examination it was found that a certain amount of the urethral discharge lodged itself in these two small culs-de-sac, setting up a mild local gonorrhœa, which again reinfected the urethra. The patient was put to bed and the usual treatment of gonorrhœa adhered to—irrigation, copaiba, &c. The urethra was first irrigated with potassium permanganate solution 1 grain to the pint. A piece of cyanide gauze was then placed around the urethral orifice and a hypodermic syringe with a smooth blunt needle was employed to irrigate these abnormal openings with potassium permanganate. This was done thoroughly, and the openings were then filled with nargol jelly 10 per cent., the meatal ingrowth being similarly treated. This was done morning and evening. The patient improved under this treatment, and after four days in bed and seven days' quarantine he was discharged to duty with no recurrence as yet.

Reviews and Notices of Books.

1. *The Pneumothorax Treatment of Pulmonary Tuberculosis.* By CLIVE RIVIERE, M.D.Lond., F.R.C.P.Lond. London: Henry Frowde and Hodder and Stoughton. (Oxford Medical Publications.) 1917. Pp. 186. Price 6s.
2. *Pulmonary Tuberculosis: Its Diagnosis, Prevention, and Treatment.* By W. M. CROFTON, M.D. N.U.I. With coloured frontispiece and 10 illustrations. London: J. and A. Churchill. 1917. Pp. 122. Price 6s. net.
3. *Rules for Recovery from Pulmonary Tuberculosis: A Layman's Handbook of Treatment.* By LAWRASON BROWN, M.D. Second edition, thoroughly revised. Philadelphia and New York: Lea and Febiger. 1916. Pp. 184. $1.25 net.

1. In this country a concise survey of the pneumothorax treatment of pulmonary tuberculosis has hitherto been lacking, and the busy practitioner has had no handy guide to this treatment, its possibilities and limitations, its rationale and technique. The history of collapse therapy is instructive. As Dr. Riviere points out, it was James Carson, of Liverpool, who in a series of physiological essays published in 1821 was the first to urge the trial of pneumothorax in the treatment of disease. Another Englishman, Cayley, went a step farther and, in 1885, treated a severe case of hæmoptysis by admitting air to the pleural cavity through an incision in the chest wall. But from this stage onwards the evolution of the treatment falls to the credit of continental and American workers, and it was not till 1910 that it was taken up in England, and then only by a small private sanatorium and the inoculation department of a general hospital. By this time the treatment had been adopted as a matter of routine in suitable cases by many sanatoriums abroad. Though it can hardly be counted unto the chest specialists of this country for righteousness that they have, with very few exceptions, lagged in the study of the mechanical treatment of the lungs, it must be admitted that the inclination to back no runner till the winning-post is passed is defensible up to a certain point on the plea that, in the treatment of tuberculosis, there has been such a mob of starters with so deplorably few winners. It may be asked: Is this treatment a "winner"? The answer is to be sought in Dr. Riviere's book. Apart from an occasional lapse into the seductive vice of enthusiasm, the author is admirably critical and judicial. The first chapters are devoted to rationale, indications, and contra-indications. Later chapters deal with apparatus and technique. The author is to be congratulated on his preference for plain instruments; the highly complicated apparatus advocated by some operators requires a special training to use it.

The section dealing with the accidents that may occur, and how to avoid them, is calculated to place these bogeys in their true perspective; but the author would have done well to have emphasised more clearly the comparative comfort to the patient with which the treatment can be carried out from start to finish. To many the very name of the treatment suggests all the horrors of a spontaneous pneumothorax. The term *artificial* pneumothorax is after all about as appropriate as, say, *artificial* venesection. Many, if not most, readers will, no doubt, turn first to the concluding chapter in which the author discusses the results of the treatment. Here it receives the dubious praise of statistical endorsement. More convincing is the quotation from Burnand: "All the physicians who have applied artificial pneumothorax on an adequate scale agree in assigning to it an eminent therapeutic value. We have failed to find such unanimity up to now in the appreciation of any other anti-tuberculous remedy," which agrees with the author's own verdict in the opening lines of his preface. Dr. Riviere commends himself to his readers by a literary style as attractive as it is lucid, and the publishers have provided his book with an agreeable setting.

2. It is impossible to disagree with Dr. Crofton in calling his book on pulmonary tuberculosis a sketch. It is indeed sketchy. However, it possesses the charm of unconventionality, and in matter both of omission and commission the orthodox will find much to challenge. On the subject of treatment, for example, the author finds graduated labour and sanatorium treatment scarcely worthy of notice, while several pages are devoted to iodine therapy. His faith in iodine as an intravital germicide is thus confessed (p. 71): "The claims of iodine for this purpose have always appealed to me very strongly. For is not an organic preparation of it manufactured in the thyroid?" The author has interesting views on "opotherapy." Of menstruation he writes (p. 104): "If it is normal (*sic*) or too abundant, testicular substance should be given ..... . A combination of adrenalin, pituitrin, thyroid extract, testicular substance and ovarian substance can be obtained commercially, and is one of the most powerful general tonics I know." Both patients and sanatoria must feel tempted to tilt at the author over the following (p. 89): "Public (*sic*) patients of Classes I. and II. may with safety be sent to sanatoria; the other cases are very much better treated in suitable hospitals, where they can have the benefit of careful nursing." The author is convinced that (p. 84) "tuberculosis is a mixed infection," and writing of the microbes complicating pulmonary tuberculosis he says (p. 5): "As we shall see later, it is much safer for treatment purposes to treat all microbes that grow at 37° C. as infecting the patient and not to consider a microbe which has not been described as not being pathogenic." Whether the microbe has been treated handsomely or *not*, the reader, at any rate, feels *not* inclined *not* to feel puzzled, *not* to say baffled.

3. The world is full of dreary little books and pamphlets, veritable Job's comforters up to date, purporting to teach the consumptive his duty to himself and his neighbour. But this sorry stuff does not bear comparison with Dr. Lawrason Brown's book. It is as fresh as the simple life he would have his patients lead. Under cover of breezy aphorisms and homely comparisons, the author conveys a wealth of sound advice. In fact, though the book is written for the perusal of the patient, it contains many a hint which even the author's fellow sanatorium physicians will find new and valuable. Endorsing the dictum: "Overeating is just as dangerous as undereating," the author dissociates himself emphatically from the Nordrach régime of the dyspeptic "nineties." Himself no champion of smoking by the consumptive, he yet holds that tobacco injures fewer men than excess

in eating. His words: "The path to cure is steep, and is paved with the stones of small details" form an excellent epitome of sanatorium treatment. The merits of the book are so obvious that we can even forgive the author for such an amazing statement as this (p. 55): "Nearly every tuberculous patient has a more or less deranged nervous system." His parting aphorism: "Remember that the porch is the most essential feature of the house" will, it is to be feared, be enjoyed as a paradox rather than accepted as a truth by many readers, whose observance of it might prolong their lives. Dr. Lawrason Brown wishes his pages to be used by patients as a hand-book of the fundamental principles of the cure, and we think that our readers might well recommend it from this point of view to their charges.

Hygiene and Public Health. By Sir ARTHUR WHITELEGGE, K.C.B., M.D. Lond.; and Sir GEORGE NEWMAN, M.D. Edin., F.R.S.E. Thirteenth edition, revised and enlarged. London: Cassell and Co. 1917. Pp. 796. Price 10*s.* 6*d.* net.

THE new edition of Whitelegge and Newman is a record of six years' progress in preventive medicine and its administration. The book still bears the conventional title of hygiene, although it is as much a concise text-book of medicine on its preventive side as Osler, or Taylor, or Wheeler on the remedial side. It is, in fact, a curious chapter in evolution, that the remedial book should start off with the phenomena of fever or of immunity, followed generally by a topographical grouping of diseases, while the preventive book opens with the primeval elements of air, fire, water, and earth, followed by groups of parasites, large and small, and the spheres of various local authorities. It would be stimulating to the reader to consider an arrangement of the two subjects on parallel lines. The time is rapidly passing when public health can be considered a branch of medicine to be taken as an extra, or even as a post-graduate, course. Prevention must be studied as a matter of course alongside treatment in connexion with each disease and morbid state, and the war, if it has done nothing else, has made this abundantly clear.

The present is therefore a peculiarly appropriate time for the appearance of a text-book of preventive medicine, and given the outline as fixed by tradition we have little except praise for the filling in of the details. The pages are small, and 800 of them are few in which to include all that is essential in the new without ommitting anything that was good of the old. But space has been found for the inclusion of all important legislative and administrative changes. The work of the Royal Commission on Venereal Diseases, of the Committee of the Royal Society dealing with food questions, the Mental Deficiency Act of 1913, the National Insurance Act itself, all receive proper notice. Such topics as model villages and the health of home workers are discussed. The sanitary improvisations of the Army and Navy Medical Services command a chapter which we would gladly have seen longer, and in the application to hygiene of the bully-beef tin, in the absence of expensive and complicated engines, we see the future solution of many of the problems of rural hygiene. In a few places condensation has led to ambiguity, as in the estimate (p. 484) of the action of salvarsan, which might well give the reader too optimistic a view of its rapidity and certainty of result. The lessons to be drawn from last summer's experience in America of poliomyelitis in epidemic form in an *urban* area might well have found a place. It might be inferred from p. 492 that the *prophylactic* dose of tetanus serum is given intrathecally. A few actual slips occur, as when TO is confused with old tuberculin—a good reason surely for discarding these misleading initials altogether. And are the authors really satisfied that the tubercle bacillus does form spores (p. 469)? More serious, perhaps, is the conventional choice of illustrations which group themselves round the rain-gauge, the water-closet, and the visible parasites. The only picture of the spirochæte of syphilis shows nothing. Now that the German hand-atlas is no more with us, could not a really representative collection of pictorial preventive medicine be issued as a supplement?

A word of commendation should be added for the enterprise of authors and publisher in bringing out a revised edition when both time and material are scarce.

Pathology, General and Special, for Students of Medicine. By R. TANNER HEWLETT, M.D. Lond., F.R.C.P. Lond., Professor of Bacteriology in the University of London. Fourth edition. London: J. and A. Churchill. 1917. Pp. 631. Price 12*s.* 6*d.* net.

IN reviewing previous editions of this book we have already commented on the success with which Professor Hewlett has selected and arranged the vast amount of material before him to make a student's text-book. The subject of general pathology is perhaps less bounded by rigid limitations than any other with which the medical student has to deal, and it is well for him when it is largely vital pathology which an author takes as his standpoint and not simply that of the post-mortem room and the pathological museum. It is five years since the appearance of the last edition of this text-book, years which have added much to our knowledge of such general conditions as shock and collapse, as well as the special conditions due to trench warfare, of which the more important are frost-bite, nephritis, and jaundice; and these have been duly considered in the text. The illustrations are well chosen and representative, although we should gladly see all the microscopical preparations done in colour; black and white, however good, gives but an artificial view of a stained section. This is a point, however, which it would ill become us to labour, knowing, as we do from experience, the practical difficulties which attend illustration in colour at the present time. The book is one which may be recommended not only to the student but to the practitioner who wishes to keep correct his perspective of a constantly changing subject.

The Fundus Oculi of Birds, especially as Viewed by the Ophthalmoscope: A Study in Comparative Anatomy and Physiology. By CASEY ALBERT WOOD. Illustrated by 145 drawings in the text and by 61 coloured reproductions of the paintings of ARTHUR W. HEAD, F.Z.S. Chicago: The Lakeside Press. 1917. Pp. 181. Price £3 3*s.* net.

THE makers of this very beautiful volume—Dr. C. A. Wood, Professor of Ophthalmology in the University of Illinois, and Mr. A. W. Head, a Fellow of the Zoological Society of London—are heartily to be congratulated upon the presentation of the results of their investigations. For the last ten years they have been engaged upon the quite difficult problem of examining and recording the appearance of the fundus oculi in living, or recently dead, birds. Anyone who has tried to use a direct vision ophthalmoscope for the examination of the eye of any lower animal will appreciate the initial difficulties of their task; but with birds there are very special circumstances, such as the peculiar action of mydriatics, the presence of a nictitating membrane, and in many cases the minuteness of the eye itself, which increase these difficulties enormously. We have personal knowledge of the experiences of a highly accomplished ophthalmologist in the examination of the fundus of a tawny owl, and his account of this adventure increases our admiration for the patient and finished work of the authors.

The account of the process of examination is particularly well described by Dr. Wood, and his many pieces of practical advice will be of the greatest assistance to those who, stimulated by his example, continue these studies. The results, so far as they are capable of being condensed, may be said to embrace an extremely wide field of suggestive conclusions. First in scientific appreciation will be the purely physiological findings—the many beautiful co-relations of structure and function determined by this study. Again, there are the observations upon the well-marked changes which domestication and cage-life produce, as well as the deductions as to possible changes of habit in wild birds. That many of the findings are useful to the systematist there can be no doubt; and that the similarity of the fundus of the gecko and the apteryx is of great interest cannot be denied, but the *living* side of the work is its greatest merit in our eyes. As for the plates, they possess the perfection that one would look for when it is realised that the very best methods of modern colour reproduction have been applied to the work of Mr. Arthur Head, whose experience of ophthalmoscopic drawing extends over a period of some 20 years. The volume is an extremely beautiful one, and it embodies work which is peculiarly difficult, yet particularly well done.

Common Diseases of the Male Urethra. By FRANK KIDD, M.B., B.C.Cantab., F.R.C.S.Eng. London: Longmans, Green, and Co. 1917. Pp. 132. Price 5*s.* net.

THE book is comprised of a series of lectures delivered by the author at the time when venereal clinics were being started under the scheme of the Local Government Board. It is of the type much needed by those unfamiliar with the present-day methods of diagnosis and treatment, which for the most part can only be found in text-books of foreign origin.

The lectures primarily deal with the diagnosis and treatment of gonorrhœa in its various stages, so arranged as to emphasise the most important practical methods without any attempt to theorise. The methods adopted by the author, after the trial of many others, are, however, only mentioned. The important feature in the book, which is everywhere emphasised, is the desirability of defining the exact pathological condition present in each individual case before adopting the requisite treatment; the procedure necessary for obtaining this information is carefully outlined. Secondly, the type of treatment necessary for pathological change found and based on such findings is described in detail. These two points should strongly appeal to the practitioner who desires to depart from any empirical methods that he has previously adopted. The value of urethroscopy, both in diagnosis and treatment, is also duly placed in its proper position. Many useful tips for treatment are recorded. The book is profusely illustrated. A separate lecture, delivered by Dr. P. N. Panton, dealing with the clinical pathology of the diseases of the urethra is included.

At the end of the lectures are four appendices: 1. Records of 70 clinical cases each illustrating points of interest. 2. The author has embodied his evidence before the Royal Commission on Venereal Diseases. It deals with certain statistical information, latency of disease in relation to infection, various complications of the disease, sterility, stricture, the question of marriage and urethritis, and the question of prevention and treatment of the disease as they should, in the opinion of the author, be practised. There are many points of importance in the report worthy of the consideration of practitioners. 3. A description of the author's own room in his private clinic. 4. Miscellaneous notes dealing with the complications of the disease.

The book should be found useful to all those unfamiliar with present-day methods of dealing with urethritis. It can be thoroughly recommended to those whose business it is to work in the newly formed venereal clinics, even if it does nothing more than to stimulate practitioners to define the pathological changes present in their cases.

Les Blessures de l'Abdomen. By J. ABADIE, Surgeon-in-Chief to the Hôpital d'Oran. Illustrated. Paris: Masson et Cie. Pp. 240. Price 4 francs.

IN one small volume Dr. Abadie has given a comprehensive account of the surgery of the abdomen in relation to gunshot wounds as practised in France at the present time. Professor Faure in his preface comments on the curious fact that whereas in other regions of the body the practice of war surgery has become fairly well standardised, the utmost variety of opinion is still held, and forcibly expressed, on the subject of abdominal wounds. Dr. Abadie's book will help to clear up the discrepancy. He deals in succession with the principles, the organisation, and the technique of abdominal wound surgery, summarising clearly and fairly the views of others as well as his own rich experience. It is hardly surprising to find that he concludes in regard to penetrating wounds: "En guerre comme en paix, les résultats opératoires confirment qu'il y a bien un traitement de choix des plaies pénétrantes de l'abdomen: *ce traitement, c'est la laparotomie!*" The volume is singularly well illustrated in all its sections and cannot fail to interest the British surgeon, who will find a useful stimulus in comparing his own methods with those of the author.

INSTRUCTION IN HOSPITAL ADMINISTRATION.—A three months' course of lectures and demonstrations in hospital administration, with a view to the requirements of the Diploma in Public Health, will be given at the South-Eastern Hospital of the Metropolitan Asylums Board (Avonley-road, New Cross, S.E. 14) by the medical superintendent, Dr. F. M. Turner, on Tuesdays and Fridays at 5 P.M., beginning Tuesday, Oct. 2nd. The fee for the course is £3 3*s.*, payable to the Metropolitan Asylums Board at the offices of the Board, Embankment, E.C. 4.

LIBRARY TABLE.

SOME WAR BOOKS.

FROM a group of books treating primarily of the medical aspects of the war, we select four for notice, which have this in common, that they are graphic descriptions of personal experiences. Captain Dolbey's book (*A Regimental Surgeon in War and Prison.* By Captain ROBERT V. DOLBEY, M.B., M.S.Lond., F.R.C.S.Eng., R.A.M.C. London: John Murray. 1917. Pp. 248. 5*s.* net) concerns the very early days of the war, narrating the adventures of an officer of the Royal Army Medical Corps with the British Expeditionary Force between August and October, 1914. Captain Dolbey records his work as regimental medical officer in part of the retreat, the advance at the Marne, and in the battles of the Aisne and in the neighbourhood of La Bassée. His adventures came to an abrupt conclusion when one October morning he was taken prisoner, and with the wounded under his care, orderlies, and stretcher-bearers, was imprisoned in Germany. The latter chapters of the book tell the tale of Germany as seen by a captive, describe the prisoners' camps at Crefeld, Minden, Sennelager, and Gütersloh, and depict what the author calls "the nightmare that was the winter of 1914–15." It is these last chapters which make the historical value of a book which is clearly arranged and well written.

Professor Boyd's book (*With a Field Ambulance at Ypres.* By WILLIAM BOYD, Professor of Pathology, University of Manitoba. Toronto: The Musson Book Company, Limited. 1916. Pp. 111. $1) is a personal diary, kept, as he says, "in the kitchens of French farmhouses, in muddy dug-outs, and other unromantic places." The notes date from March, 1915, to August, 1915, and therefore may be read consecutively to Captain Dolbey's book. The views and reflections are communicated with great sincerity and in a quiet, intimate style. Among them will be found a record of the first gas attack in the war, a note dated April 28th, 1915, running as follows:—

"This morning I had to go to one of the casualty clearing stations, and there I saw a sight which for sheer ghastliness equals anything to be seen in any dressing station. The hospital is built around a great courtyard, and in that courtyard were two hundred men on stretchers. Some were lying in a state of stupor, the flies buzzing about their faces; some were sitting up gasping for breath, with hands and faces of a deep, dusky hue, evidently in the greatest distress; over the countenance of others the pallid hues of death were beginning to creep, whilst a few had fallen back and with gurglings in the throat were passing away into the undiscovered country. They were the first gas cases from Ypres and Hill 60."

A pathetic photograph is appended to the note showing a group of Canadian soldiers who were among the first to suffer from gas-poisoning.

Miss Agnes M. Dixon (*The Canteeners.* By AGNES M. DIXON. London: John Murray. 1917. Pp. 176. 3*s.* 6*d.* net) gives a vivid account of life in a French Red Cross canteen not far from the front, where it was her duty to minister now to soldiers moving forward and now to wounded coming back. The book is dedicated "To the French *poilu* as I have known him; to his courage, patience, modesty, and chivalry; to his doggedness and grim determination to rid his beloved *patrie* of the foul and cruel invader"; and is illustrated with a good many well-produced photographs. This modest record of hard work done makes pleasant reading because it is infused with the spirit of cheerfulness which has been a marked feature of all Red Cross work. The author's profits from the sale will be handed over to the London Committee of the French Red Cross, under whose ægis the "Cantines des Dames Anglaises" are established in France.

Major Charles Barber (*Besieged in Kut and After.* By Major CHARLES H. BARBER, I.M.S. Edinburgh and London: William Blackwood and Sons. 1917. Pp. 344. 5*s.* net) tells the story of the siege of Kut in graphic language. His narrative takes us from before the battle of Ctesiphon up to April 29th, 1916, when the place was surrendered, all attempts at relief and at victualling having failed. It is a sad summary of calculations upset and previsions unrealised, from which the courage of those actually engaged in the struggle emerges vividly.

The following books (*After-War Problems*. By the Earl of CROMER, Viscount HALDANE, the Bishop of EXETER, Professor ALFRED MARSHALL, and Others. Edited by WILLIAM HARBUTT DAWSON. London: George Allen and Unwin, Limited. 1917. Pp. 366. 7*s.* 6*d.* net.—*Proposals for the Prevention of Future Wars*. By Viscount BRYCE and Others. London: George Allen and Unwin, Limited. 1*s.* net. Pp. 53.—*The Choice Before Us*. By G. LOWES DICKINSON. London: George Allen and Unwin. Pp. 274. 6*s.*—*The Perils of Peace*. By CECIL CHESTERTON. With an Introduction by HILAIRE BELLOC. London: T. Werner Laurie. Pp. 239. 2*s.* net) deal with the purposes, necessities, and perils of militarism and also show the dangers underlying the policy of peace at any price, and they do these things from many different points of view. As the title-page shows, the book written by Lord Cromer and his fellow-workers is the product of some of our foremost intelligences focussed on the solution of the large problems which the cessation of hostilities will reveal. The editor foresees that the new England, whatever it becomes, will be the result of long and painful effort, of sacrfice and renunciation. Gambetta's watchword is his also: "Le travail, encore le travail, et toujours le travail." Education, the relation of capital and labour, the land question, the economic future of women, are some of the general subjects debated with freshness and suggestiveness by the writers. In the section of Social Reform two more directly medical topics, National Health and the Care of Child Life, are handled by Dr. James Kerr and Miss Margaret MacMillan respectively. Dr. Kerr sees great possibilities of improved national health if the conditions are squarely faced and dealt with on an honest and just basis. He deprecates the tinkering with superficial symptoms, and finds that the chief national concern should be healthy maternity and good nursing. All services and commodities, he concludes, necessary for public health should be completely controlled by the community in its own interests and for the benefit of all its members. Miss MacMillan's plea for the open-air nursery school will be read with interest in connexion with Mr. Fisher's recent proposals. All who wish to help in the solution of the after-war problems should study this book.

Lord Bryce and his collaborators suggest a treaty to be established between the great Powers of Europe, the United States, and Japan, agreeing to refer to the existing permanent Court of Arbitration at The Hague, or to the Court of Arbitral Justice proposed at the second Hague Conference—if such a Court is established—or to some other arbitral tribunal, all disputes of a justiciable character, and which the Powers concerned have failed to settle by diplomatic methods. Matters of national honour, it is suggested, would also be submitted to arbitrament. The prefatory note is dated February, 1915, although publication did not take place till more than two years later. The project is a well-thought-out one, and quotations from leading statesmen on the subject of international relationships after the war show that the views of the projectors are shared by leading and responsible persons. It has become abundantly clear, however, to everybody who thinks, that proposals for the reform of international relations can have no substantial basis until Germany has been punished for the repudiation of her undertakings—to put her offences against the world at their lowest estimate.

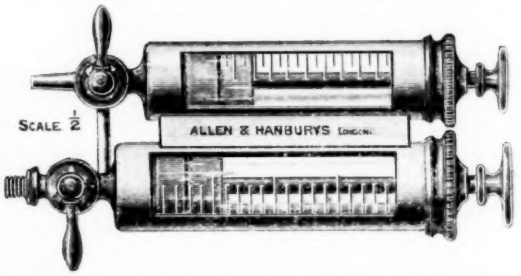
Mr. Lowes Dickinson in a plea for internationalism as against militarism would probably not agree that punishment of Germany was necessary, and this, it seems to us, is a weak spot in the policy which he advocates, for we have never been able to convince ourselves that punishment is not a deterrent of crime. He thinks that all the world may be unfavourably affected by militarism, but he admits that Germany is the leading case. Readers are certain to differ according to their estimates of moral values from some of the conclusions of the author, while they are equally certain to agree with others; the paradoxical position of those who attribute the necessity of war to any one cause, such as economic competition or growth of population, is neatly exposed.

It is stated on the cover of Mr. Cecil Chesterton's book that it shows conclusively "that any peace which leaves the present German Empire in existence with its centre in Berlin would be a mere truce." The book fails to do anything of the sort, but there is sense in some of what the author says.

New Inventions.

A DOUBLE-BARRELLED SYRINGE.

THE double-barrelled syringe shown in the illustration is made in two sizes—one to hold 2 cubic centimetres and the other to hold 20 cubic centimetres. The object of the smaller syringe is to inject a little saline from one barrel after the drug has been injected intramuscularly from the other barrel, thus preventing a track being made during the withdrawal of the needle. The mercury, or whatever drug is being injected, is thus prevented from getting into the subcutaneous tissue and producing an abscess or an indurated lump. A local anæsthetic can be given before the drug is injected intramuscularly, without having to make two pricks. The larger syringe is for intravenous or for intraspinal work.



If the left-hand barrel, to which the needle is attached, is filled with the solution to be injected, after inserting the needle into the vein, as much blood may be withdrawn into the right-hand barrel, emptied into a receptacle, and refilled as often as desired, before or after the drug is injected. When injecting colloids it is a good plan to let the blood mix well with the colloidal suspension before it is injected, a manœuvre which can be well carried out with this double-barrelled syringe. As the right-hand barrel can always be filled and refilled with a solution from a receptacle underneath, and the contents discharged into the left-hand barrel, a dilute as well as a concentrated intravenous injection may be given. Another advantage is, that the right-hand barrel may be filled with a calcium chloride, glucose, and gelatin mixture, which can be injected through the same needle before the contents of the left-hand barrel are discharged, to prevent shock; or after, should symptoms of shock threaten.

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Wimpole-street, W. J. E. R. MCDONAGH, F.R.C.S.

A NEW FRACTURE SUSPENSION APPARATUS.

WE examined recently a new method of slinging fractured limbs at the McCaul Hospital for Officers, 52, Welbeck-street, W. The apparatus, the "Hammock Suspension for Fractures," was devised by Miss Gasetti, a Frenchwoman.

The apparatus is simple and inexpensive. Essentially it consists of a frame made of wood, which can be bolted to any bed, becoming thus more widely useful than those forms of apparatus which need a special bedstead. The frame is quadrilateral and is held above the bed some four or five feet, and to this rectangular horizontal frame are fastened pulleys through which run cords from which the injured limb is suspended; these cords are attached also to carefully adjusted counterweights which just counterbalance the weight of the injured limb and splints, so that when the patient wishes to move the broken limb the cords give to very slight force and the limb has the minimum of disturbance. The apparatus also provides for extension, and this can be so adjusted as not to interfere with the position and movements of the limb. The apparatus allows also for abduction of the limb, a matter sometimes of great importance in fractures at the upper end of the femur. This is effected by means of a transverse bar reaching outwards for a foot or two beyond the end of the bed; the pulley over which the extension cord works is fastened to this transverse rod as far as is necessary from the middle line, according to the amount of abduction needed. The apparatus struck us as admirably adapted for its purpose.

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By the double action of secretions and peristalsis.

Opolaxyl is a combination of the secretions of the liver (biliary), pancreas, and intestines, with vegetable extract of a non-drastic nature.

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It is a normal regulator of the gastro-intestinal functions; consequently it improves the metabolic exchanges of the entire organism.

Opolaxyl does not lose its efficacy by prolonged use; its effect is gentle and constant, with the least irritation. It is not merely purgative; it stimulates the defective organs and revives the normal equilibrium; it has a lasting effect because it rebuilds the organs, thus correcting diminutional function.

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For obstinate constipation 2 or 3 tablets, afterwards 1 tablet every 3 or 4 days for a month.

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URASEPTINE is a granulated product entirely soluble in water, its bases being **Piperazine, Urotropine, Helmitol, Benzoates of Sodium and Lithium.** It contains 60 centigrams (10 grs.) of active matter to each teaspoonful.

DOSE.—2 to 6 teaspoonfuls daily.

It purifies the Urine, and this action is due to its three principal properties:

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2. **A SOLVENT of URIC ACID and of PHOSPHATES.**
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Ambrine forms a dressing which INSTANTLY alleviates pain—promotes rapid healing—forms a sure protection against infection of the wound—can be removed without pain, hæmorrhage, or injury to the newly-formed tissues. The healing leaves no scars or contractions.

The most efficient means and method of ensuring active **Hyperthermal Therapy** to the practical treatment of **Rheumatism, Gout, Arthritis, Varicose Ulcers,** and similar affections.

May be applied with camel-hair brush, but our specially designed spray greatly facilitates the application of Ambrine, especially in the case of deep wounds or extensive surfaces.

THE LANCET, June 10th, 1916:—

THE VALUE OF AMBRINE IN THE TREATMENT OF WOUNDS.

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CUPRASE

Cuprase is a colloidal Copper hydroxide which is obtained chemically by the reduction of Salts of Copper in the presence of Albumosic Acid.

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Disappearance of the Pain.

Return of Sleep.

Increase of Appetite.

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This case was given three months' life by a Specialist, being inoperable.

Yours faithfully,

(Signed) B—— B——, M.R.C.S., L.R.C.P.

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THIS preparation admits the administration of iron *for long periods* without digestive disturbance or constipation. The iron, being in colloid form, is quickly and easily assimilated. With Liquid Paraffin no habit is induced as with purgatives such as cascara, aloin, &c. Gives excellent results in Anæmia, &c.
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THE LANCET.

LONDON: SATURDAY, SEPTEMBER 15, 1917.

Reconstruction.

AT a recent meeting of the medical profession at Edinburgh a unanimous resolution was passed to the effect that the circumstances in which the medical profession is placed "made it impossible effectively to consider any scheme before the end of the war for the establishment of a Ministry of Health," and this is a view which has for its support so many obviously sound arguments that it must be seriously considered. The medical profession has given over a quarter of its total, and the most effective quarter, to the country for the purposes of the war, and though some of these men are returning to civil life others are taking their places and must continue to do so for some undefined period. As officers in the Navy and Army their opportunities for even expressing their opinions are very restricted, and as to backing those opinions by action of any sort there can be no question at all. Numbering among them men whose professional work entitles them to give counsel to their colleagues and to the country on all points in the administration of medical service, they will remain largely out of any discussions, professional or other, of the difficulties that may arise during the formation of a Ministry of Health. Yet on their return they will be confronted with the results. On the other hand, there is no doubt that for the medical profession to adopt a do-nothing attitude would be to risk the creation by lay authorities of a scheme that would not be agreeable to members of the medical profession remaining at home, and which might press hardly on certain of that large proportion of practitioners whose interests, in their absence from their usual duties, it is proposed to defend by resisting active innovations at the moment. Here again we have a point of view based on arguments which cannot lightly be dismissed, for it is quite certain that a Ministry of Health uninspired by the ideals of the class that will constitute not only its official leaders, but its rank and file, may fall sadly away from that standard of efficiency which is necessary for the justification of its genesis.

The difficulty in this situation of ascertaining on which side truth lies is a difficulty which is not peculiar to the medical profession. The medical profession has somewhat slowly begun to regard itself, and to be regarded by others, not as a thing apart from the sociology of the general population, but rather as a section of that population more intimately concerned with general welfare than is any other section; and the problem before us is before the nation as a whole with regard to all national activity. The war has lasted longer than was anticipated, and its duration may still disappoint sanguine expectations, for many of the theories regarding failure of resources and exhaustion of money are now seen to be false almost in direct proportion to the confidence with which they were enunciated three years ago. And it must be remembered that after the war is officially over an appreciable time may elapse before any free development of social life takes place. Now during all this period, of undetermined length, civilisation must not be allowed to stand still, and, if possible, it must progress in spite of the disabilities. And while, on the one hand, the days in which we live seem very inopportune for the promotion of social reforms, owing to the fact that those who would necessarily lead the movements, whether individual or collective, are so deeply engaged in fighting the Germans as to have no spare time or energy—on the other hand, these are days when great changes can be advocated and effected without creating any of the opposition which their mere suggestion would have aroused before the world's upheaval. If the policy of waiting has its advantages the same can be said for the policy of action. We must not make too much of the drawbacks attendant on revisions of our social scheme while some people are unable to play what would otherwise have been a leading part in reform; for, despite the support and guidance from sources whence they might be expected, men naturally reactionary will lean towards the cause of reform, if only through the feeling that a civilisation which has let the world in for such a welter of horrors can, perchance, be amended in many particulars.

The formation of a National Party to take the place of political parties has been objected to on the ground that this is not the time for clearing up the mess of our political system; and contrariwise the creation of a National Party has been advocated on the ground that there is much work to be done now if we are to progress in the immediate future. We see therefore that the medical profession, an integral part of the social scheme, is in a position which exemplifies our present national conditions, and what is good for the country will be good for medicine. We think that some reconstruction work should be thought out now, but that is not the same as saying that, in the absence of over 10,000 medical men—with many of our leaders in this category—from the practice of their profession, schemes radically altering the condition of that practice should be put in hand. Yet no one can fail to see that medical practice has inevitably been profoundly altered by the war. We should like to learn of the formation of a board, comparable in some ways to the Ministry of Reconstruction over which Dr. ADDISON presides, whose prime function should be to think. The members of the board could be largely spared the task of collecting facts, for the General Medical Council, the great medical corporations and medical faculties of Universities, the Government Departments having medical affairs in their charge, the British Medical Association, the leading medical charities, and the medical press can between them supply all needful information. But the interpretation of the facts thus obtained may

well require close attention from persons intimate with the details of medical education, scientific work, and professional life, and this would be ensured by the formation of a strong board; and to this board the representatives of the medical men now serving in the Navy and Army, with their good perspective of home affairs, would contribute materially.

The Pathology of War Nephritis.

LAST week we referred to the etiology of certain obscure war diseases. This week two articles on War Nephritis give occasion for a return to the subject. In one of these, which we print on another page, Captain C. E. SUNDELL and Captain A. T. NANKIVELL state the results of their study of 250 cases which have come under their personal notice. In the main they confirm the clinical observations of previous writers, but they come to a different conclusion as to the etiology of war nephritis. They suggest that the disease is caused by some error of metabolism due to a dietetic deficiency. If this is so, the rarity of nephritis in the South African War is certainly surprising, since all the dietetic deficiencies referred to by the authors were existent then, and in a higher degree than in the present war. Restricted diet has been common in war, but nephritis has been rare. The authors note that the disease was very rare among the Indian troops, but Indians are also comparatively immune from scarlet fever. Some observers hold that the infective agent in war nephritis is an organism allied to that causing scarlet fever, and if Indians are immune from one they might be immune from the other. The comparative rarity of nephritis among officers is curious, though less marked than it was, but, as the authors point out, nephritis does occur among hospital nurses, in whom a condition allied to scurvy—suggested as a cause—is not likely to arise. Several of their interesting pathological observations might be held to confirm the observations of others who have come to different conclusions. Thus they find that the blood counts were typical of the so-called protozoal diseases. An animal ultra-microscopic virus was suggested as the cause by Captain W. LANGDON BROWN (of whose work the authors appear to be unaware) in the *Journal of the Royal Army Medical Corps* for July, 1915. Their observation that the glomeruli were almost entirely destroyed or filled with endothelial plugs, and that the kidney lesion is focal rather than diffuse would tend to support Captain J. S. DUNN'S views of the embolic nature of the nephritis. It is unlike anything that has been described in the kidney in scurvy.

In the second article, appearing in the April number of the *Canadian Medical Association Journal*, Professor RUDOLF has summarised his experiences of war nephritis. Although his clinical observations are in accord with those of Captain SUNDELL and Captain NANKIVELL his conclusions are different, for he states that the disease appears to be due to some infection, local or general, the nature of which has not been determined, but probably of the ultra-microscopic variety. In general he supports Captain LANGDON BROWN'S views. He draws attention to the epidemic character of the disease, comparing it with the epidemic in the American Civil War. Like other observers, he is impressed with the low mortality rate and the frequency of nocturnal dyspnœa, which he regards as distinguishing characters of this as opposed to other forms of nephritis. Two forms of protozoal disease, new to Europe at any rate, have been held responsible for widespread epidemics of low mortality in this war—namely, the hæmogregarine of trench fever and the spirochæte of epidemic jaundice. It seems probable on the evidence available that a third organism of this kind may be responsible for war nephritis. The strongest argument adduced against an infective theory is that of Captain DUNN, who points out that the disease is almost unknown among the civil population in France, although living in very intimate relation with the military. On the other hand, we have to account for the cases among nurses and orderlies in base hospitals in France who come into close contact with the patients at an early stage of the disease. It is difficult to see how a dietetic factor could account for the entire absence of the disease from the training camps in England. The analysis of the literature of war nephritis, published last May by the Medical Research Committee, gives to all who are interested a ready opportunity of studying the subject further.

Annotations.

"Ne quid nimis."

THE ROYAL SOCIETY OF MEDICINE.

AT the recent annual general meeting of Fellows of the Royal Society of Medicine attention was called to the resignation of the first editor of the *Proceedings* and Mr. J. Y. W. MacAlister's offer to assume the duties without any addition to his salary. This offer the Council had gladly accepted, and the acknowledgment of Dr. Charlton Briscoe, honorary secretary of the society, of the large debt owed to Mr. MacAlister for his gratuitous services was warmly received. Dr. Farquhar Buzzard (acting honorary treasurer) presented the balance sheet for the year ending September, 1916, showing a balance of income over expenditure for the year of about £1000, but the number of Fellows has decreased and their subscriptions still more, making it advisable to increase the number of Fellows as far as possible, while, on the other hand, there has been a general increase in expenditure common to all bodies and persons at present. The President of the society, Sir Rickman Godlee, recalled the work done by the Emergency Surgical Aid Corps, which is called out by the police and War Office whenever an air raid takes place in London. This corps is supported altogether by the voluntary contributions of its own members, who on many occasions have spent tedious hours of waiting in the night, besides rendering considerable service. He also commented on the new feature which Mr. MacAlister had added to the *Proceedings* under the title of "Notes on Books." These notes

which are quite short, have been made by various members during the reading of the books. They consist of a few lines indicating the contents with accuracy, and publishers have been found willing to present books on the understanding that they shall receive this amount of publicity. A good number of Fellows have helped in the work, but more would be welcome, and they are invited to tell the secretary the kind of book they wish to receive. The President reported that Dr. C. G. Cumston, of Geneva, a Fellow and a member of the Section of the History of Medicine, had intimated his intention to bequeath a sum of £17,000 to the society, the income to provide for lectures on the history of medicine and additions to the society's library on that and other subjects. A vote of thanks was passed to the President for his address and for his valuable services during the past year, and the best thanks of the society were voted to the retiring Vice-Presidents and retiring members of the Council for their services during their terms of office. Dr. Maurice Craig moved a cordial vote of congratulation and thanks to Mr. MacAlister on the completion of 30 years of service to the Society, together with an earnest hope that his health may permit him to continue his work for many years to come. This was seconded and heartily endorsed by the President and carried by acclamation. Mr. MacAlister responded, "I can only say thank you, Sir, and Fellows all. At the end of the next 30 years I shall perhaps have more to say."

HAY FEVER PLANTS IN THE UNITED STATES.

IN the Eastern States of America 84 per cent. of the cases of autumnal hay fever are attributed to the pollen of the common ragweed, *Ambrosia elatior*, while the grasses, both wild and cultivated, are blamed for the early and less serious form. *A. elatior*, or ragweed, is not to be confused with the gorgeous yellow ragwort. Its pollen is only 15 μ in diameter, and with a spiculated surface increasing its buoyancy by one-half, has been shown to travel several miles in a moderate wind. Dr. William Scheppegrell, who has devoted much attention to the causes of hay fever, writes in No. 29 of the U.S. Public Health Reports on the flowers which have been incriminated in the Western States where the ragweeds are rare. All hay fever plants are wind-pollinated, which means that they bear inconspicuous flowers without bright colour or scent, and produce large quantities of pollen. He has employed the biological test, which consists in applying a weak saline extract (1 : 20,000) of the pollen to the nasal mucous membrane, gradually raising the strength until a reaction occurs. A conjunctival or skin test may also be applied. Some pollens are intensely irritating; the Californian mugwort, *Artemisia heterophylla*, produces a reaction even in a dilution of 1 : 100,000. On the whole, it is the genera *Artemisia*, *Iva*, and *Gærtneria* which account for most of the cases, and while prevention is rendered more difficult owing to the variety and great prevalence of the plants concerned, it is not insurmountable, inasmuch as the pollen of these plants is much heavier than that of *Ambrosia*, and their range of wind distribution not more than one-sixth. The education of the public in the noxiousness of these weeds is, according to Dr. Scheppegrell, the important matter when suitable legislation will be enacted. New Orleans has already, in its grass-weeds ordinance, legislated in regard to the causes of the vernal fever.

THE METROPOLITAN WATER-SUPPLY.

ACCORDING to the reports to hand, the rainfall at 12 stations which have been selected as giving equal representation for all parts of the Thames basin during the months of April, May, and June was above the average mean for those months as recorded for the previous 34 years. In April it was 0·24 inch above, in May 0·30 inch, and in June 0·22 inch. The work of filtration proceeds satisfactorily, as all the samples collected at the different works were, generally speaking, clear, bright, and free from suspended matter. In some respects the chemical quality of the raw river waters in April and May was worse or showed little change compared with their averages, but in June the results were generally better. All the raw river waters contained, however, fewer bacteria than their respective averages for the year 1916, while all the filtered waters, generally speaking, yielded not unsatisfactory results, from 71·4 (June) to 97·4 (April) per cent. of the samples containing no typical *B. coli* in 100 cubic centimetres examined.

INDIGENOUS MALARIA IN ENGLAND.

AN interesting case of malaria acquired in England, by a soldier, aged 20, who had never been out of the British Isles, was reported in THE LANCET of August 4th last by Captain A. C. D. Firth. Other cases of the same nature have been detected during the last few months, especially amongst the troops stationed in and near Aldershot. The return to England of large numbers of men who have had malaria in the Eastern campaigns involves the presence among certain military populations, and to some extent among the civil population generally, of persons who carry in their blood the parasite of malaria. Information as to the prevalence of different kinds of mosquitoes in England is by no means complete, but there is no doubt that in certain areas in the south and east, particularly those where marsh fever or ague was common up to the earlier part of last century, anopheline mosquitoes, particularly *A. maculipennis*, are still met with and are occasionally abundant. Towards the end of last month weather conditions seem to have favoured the production of swarms of mosquitoes in many places, some of which have undoubtedly included anophelines. In these circumstances measures to limit possible malaria infection are clearly required, and we understand that they have been taken very thoroughly by the War Office, which, with the advice of Sir Ronald Ross, has made arrangements for the segregation of known cases of malaria in special depôts and hospitals, for the continued administration of quinine in the case of all soldiers who are likely to remain carriers of malaria, and for various other precautions to be taken. As regards the civil population the Local Government Board has instituted inquiries, through the medical officers of health of districts likely to be affected, for the existence of indigenous cases of malaria, and has supplied these officers with a memorandum on the subject to be circulated to medical men practising in their areas. It is there urged that medical practitioners should keep the medical officer of health informed of any cases of fever occurring in their practice shown or suspected to be due to malaria, in order that inquiries may be made as to possible sources of infection. The memorandum further states that the department has made arrangements whereby specimens

of blood will be examined and reported on free of charge, if sent, according to instructions, to the medical officer of the Board at Whitehall. It seems probable that only a small number of sporadic cases will be heard of, and with the near approach of weather conditions fatal to the adult anopheline such risk as now exists should not long continue. But in view of possible future developments it is of great importance that all available facts should be ascertained, and that the possibility of malaria should be kept well in mind when anomalous or unusual febrile attacks are met with, especially near large military centres which are situated close to marshy and low-lying areas. The liability of children to this disease should also be remembered.

ADOLF VON BAEYER.

Professor Adolf von Baeyer, whose death in Munich was announced last week, was prominent among the founders of Germany's chemical industry. His early studies were devoted to the constitution of complex molecules, and much of our knowledge of the architecture of organic compounds is due to his brilliant investigations. His work, though at first of a purely scientific character, soon found industrial application, and a trade in synthetics was set up. His greatest achievement, perhaps, was the preparation of synthetic indigo with naphthalene in one case and benzene in another as a starting point. The process, after the expenditure of very large sums of money, was acquired by the Badische Anilin und Soda Fabrik at Ludwigshafen, which is quite distinct from the Farbenfabriken of F. Bayer and Co. at Elberfeld—also a very large concern. Adolf von Baeyer was born in Berlin in 1835, and was a pupil of Bunsen and Kekulé. In 1860 he became assistant professor in Berlin at the technical college, then from 1872–1875 in Strassburg, and lastly the head of the university laboratory at Munich, the famous Liebig's chair.

THE NUTRITIVE VALUE OF BEER.

THAT the direct food value of beer counts for little is borne out by an interesting investigation carried out by J. S. Sharpe in the department of physiology, Glasgow University, the results of which are published in the August number of the *Biochemical Journal*. It cannot be denied that the alcohols, sugars, and dextrin have a certain value as sources of energy, but even if we reckon that the total nitrogen found is present as nutritive material still the amount is insignificant. But, as Mr. Sharpe shows, it is a mistake to assume that all the nitrogen present is in the form of protein. As a matter of fact, the protein nitrogen of the beers he analysed varies from only 13·2 to 37 per cent. of the total nitrogen—that is to say, the protein content of beer varies from 0·038 to 0·185 per cent., quite insignificant figures. In regard to the further distribution of nitrogen in beer, the amino-acid nitrogen varies from 0·014 to 0·040 per cent., nitrogen in purins from 0·010 to 0·039 per cent., and amounts due to other substances as alkaloid and bases are quite negligible. These results are of interest, especially in view of the report of the Committee of the Royal Society on the Food Supply of the United Kingdom, which stated that the nitrogen compounds of beer have been little studied. So incomplete is our knowledge of their nature that this committee did no more than assume that something between 50 and 100 per cent. of the nitrogen in beer is in the form of protein or amino-acids which are utilisable in the body. The higher gravity beers, as might be expected, show a higher nitrogen value than the low gravity beers; but is not all this beside the point? Beer is consumed because it is to so many a pleasant and palatable beverage. The thirsty man pays no regard to the food value of beer; he looks upon it as a pleasant, refreshing drink, and he is right; and it is fallacious once and for all to justify its consumption on the cult of calories or "tissue formers." There is, however, one point overlooked in regard to the rôle of beer in the dietary. It contains a material amount of diet deficiency substances of the order of vitamines, and investigations have shown that beer added to the dietary increased the assimilation of non-nitrogenous foodstuffs, and particularly of fats, while alcohol in moderate amount increased protein absorption from nitrogenous foods. Then, again, beer has undoubtedly a condimental action and often makes the simple meal attractive, if it is only bread and cheese. Thus regarded, beer, instead of representing a waste of food materials from which it is made, may actually effect an economy in inducing in those whose custom it is to drink it a better appropriation of the food they consume. In the recent bitter controversy about the merits and demerits of beer this consideration should not be left out of the equation, in justice to beer-drinkers who are modest in their demands for the national beverage.

WE draw our readers' attention to the appeal of the War Emergency Fund of the Royal Medical Benevolent Fund, a second list of contributions to which appears in our advertisement columns. The fund is intended to coördinate and supplement the other existing agencies concerned with the material prospects of the medical man who has made sacrifices for his country. Those responsible for its administration are determined that it shall help, and help effectively, needs which can be met in no other way.

THE Ministry of Food is itself a novelty and has taken the novel course of issuing an official journal. The first number of the *National Food Journal* appears this week, and the breaking of the customary reticence of a Government Department is, in this instance at all events, a matter for congratulation, for the journal should be a persistent weapon in the campaign of food economy.

NEWS has been received from Dublin of the sudden death of Dr. Frederic William Kidd, who occupied for many years the Chair of Midwifery at the Royal College of Surgeons in Ireland and was an ex-Master of the Coombe Lying-in Hospital.

FOREIGN ORDERS AND DECORATIONS.—The King has granted unrestricted permission to the undermentioned medical men to wear decorations conferred upon them respectively by the Russian Government, in recognition of the services which they have rendered to the Russian sick and wounded, under the auspices of the British Red Cross Society and the Order of St. John of Jerusalem in England: Dr. Frank G. Clemow, C.M.G., has received the Order of St. Anne, Class 2, with Swords; Dr. Edward M. Hime the Order of St. Stanislas, Class 2; and Mr. Alfred E. Hind the Order of St. Anne, Class 3.

THE BIOLOGICAL ASPECTS OF WARFARE.

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I.

The Function of the Combative Instinct.

FROM the biological standpoint the combative instinct is to be regarded as a normal mental attribute, not as a quality to be condemned offhand as something which the world would be all the better without. That it has existed for a useful purpose is shown by its universality among all but the lowest animal organisms and by the fact that special weapons of offence and defence in the shape of horns, tusks, claws, and the like have evolved to give effect to it. Some measure of combativeness is obviously necessary for all the vertebrates and many of the invertebrates in the struggle for existence, for a creature without some self-assertiveness, some show of fight, would be at a distinct disadvantage in that struggle. The primary object of this instinct is to enable an animal to get the better of a rival by direct encounter. The emotion attaching to it is anger—the most violent, be it noticed, of all the emotions. This emotion, unless controlled, causes the combatant to assume a ferocious aspect—to show the teeth, erect the hairs, and to utter terrifying sounds, all with the object of cowing the opponent—while at the same time it has the effect of liberating the flood of muscular energy needful for the ferocity of onslaught which makes for success. Although unbridled rage is helpful in fight among the lower animals, needless to say it is the reverse of serviceable in the deliberate fighting of man against man, as in boxing and fencing, for here anger interferes with those cautious methods of attack and defence which are essential to success. To lose one's temper in fighting of this kind may be to lose the fight. With this reservation it is curious to note the close kinship between the combatant instinct of man and of the lower animals. The untamed man, when enraged, assumes in very truth the aspect of the tiger: he puts himself in a threatening attitude, frowns, glares, rolls his eyes, grinds his teeth, snarls, growls, or even roars—thus instinctively seeking to strike terror into his opponent. The raising of the voice in anger is manifestly akin to the roar of the angry carnivora. Darwin has pointed out the connexion between the human sneer and the snarl of the angry dog, and I have myself seen a refined woman in a transport of spite lift her upper lip and show her teeth in a manner absurdly like an enraged beast. But nothing shows more clearly the essential identity of the fighting instinct in man and the lower animals than the way in which a child, soon after it can toddle, will rush at the object of its passion and proceed to bite and scratch, i.e., to use teeth and claws, as any of the carnivora might. It would be interesting to know how far the grimacing habit of children is related to the combative instinct. A child protrudes its tongue and contorts its features in order, it would seem, to express dislike and defiance.

The primary object of anger, rooted as it is in the fighting instinct, is to prompt to combat. This is its natural goal. The emotion may, however, fail to realise itself in the natural way, owing to the operation of restraining influences. Such a one is fear—in the case of the lower animals practically the only one. In the case of man, other inhibitory influences come into play. The normal civilised man, even when in a tempest of passion, is able by an effort of will to restrain himself from venting his rage by the primitive method of personal assault.

Now, among the causes of anger pain, especially when it can be referred to an external source, takes a prominent place. This, we may suppose, is because among the lower animals pain is frequently caused by the attack of another animal. The animal attacked is roused by the pain inflicted to retaliate upon the aggressor, and every additional pang sustained in the course of the encounter intensifies the fury which makes for success. In order that it may excite to fury the pain must not, however, be too intense, for in that case it may have a paralysing, numbing effect, robbing the combatant of courage and prompting to hasty retreat. This cowing effect of pain is made use of in training unruly animals, human and other.

The tendency to retaliate upon an object causing pain does not always display itself in a rational way. There is a disposition to vent rage, e.g., upon the innocent bearer of bad news or even upon inanimate objects: thus a man who hurts himself against an object may have an irresistible impulse to kick that object, just as a dog bites at the stick which is lifted against him; similarly, an undisciplined person may in a transport of passion relieve his feelings by smashing all the breakable articles within reach.

The effects of anger which realises itself in actual assault being to injure and to inflict pain, the question arises how far the assailant derives satisfaction from the injury and pain which he inflicts. Here we find a striking contrast between man and the lower animals—and not to the credit of the former. The sub-human animal has no conscious desire to inflict pain upon the object of its rage; it is just impelled by blind instinct to make a destructive onslaught upon it. The like is true of the child who scratches and bites the person annoying it. The child—the young child at least—does not form a definite idea of inflicting pain and then proceed deliberately to put it into effect. When, however, the stage of self-consciousness is reached, anger may beget a definite desire to hurt the object of it, and if this does not find vent in the primitive way of inflicting some bodily injury, it may seek satisfaction by causing pain in other ways, as by taunts, jeers, scoldings, or long and deep-laid plans of revenge.

Here we touch upon what is perhaps the basest of all vices—cruelty. A cruel person is one who exults in the pain, mental or bodily, suffered by another. Cruelty has its basis in anger (and thus is related to the combative instinct), though there is a cold-blooded form of cruelty which may be enjoyed without any obtrusive feeling of anger. Cruelty, implying as it does self-consciousness—the ability to realise the feelings of others—is essentially a human attribute. Children who impale frogs and eviscerate flies cannot be said to be cruel, for they know not what they do. Nor are the lower animals cruel, seeing that they are wholly unconscious of the sufferings of others. Thus the charge of cruelty against the carnivora is unjust. These animals generally destroy their victims outright and in the rare cases (e.g., cat and mouse) where they prolong the suffering they have no knowledge of the pain they are causing. When therefore we stigmatise the conduct of the cruel man as "brutal," we wrong the brutes. The animal which attacks another, and in so doing causes pain merely responds to a blind unthinking instinct; but man, proud man, who looks before and after, is able to realise and take pleasure in the pain he deliberately, and by subtle means maybe, sets out to cause. It is clearly absurd to speak of his conduct as "brutal." Rather should we call it devilish, the Devil usually being credited with a goodly share of intelligence. We must cease to libel the brutes by designating the basest acts of man as brutal. As a matter of fact, they cannot be charged with non-moral conduct, seeing that they are devoid of self-consciousness.

Spite, vindictiveness, and actual revenge are all forms of cruelty, and thus are rooted in the combative instinct, and so too is hatred, which is a kind of persistent anger directed on a particular object. Irritability and querulousness are minor manifestations of the same instinct. But while some of the worst of man's vices are derived from the fighting instinct, so also are some of his best qualities. The primitive desire to get the better of another has found expression not in violence alone, but in that hearty spirit of emulation which is essential to progress, and anger in the form of righteous indignation has through the ages moved men altruistically: we feel a touch of the sufferings of others and some measure of the anger and the impulse to retaliate which actual experience of these sufferings would excite in ourselves. Here, indeed, is the source of all our reforms.

The Evolution of the Combative Instinct.

Two important factors have favoured the evolution of the combative instinct: (1) the reproductive instinct, and (2) the struggle for food.

1. Among polygamous species the males, as is well known, fight furiously for the possession of the females. To aid them in these encounters they are provided with special weapons which (as in the case of the horns of the stag) may only attain full development, and only remain fully serviceable, at the breeding season. At this time, too, animals, otherwise docile, may become dangerously aggressive. In the case of the female, also, the combative instinct is employed in the service of the reproductive

function. A cat in charge of her kittens will, when danger threatens them, be roused from the tender maternal mood to sudden fury in their defence. Here we see the most opposed of all emotional states—love and anger—alike called forth at the bidding of the reproductive instinct. Let us not fail duly to appreciate the fact that one and the same individual is endowed with such opposite potentialities. I shall return to this point presently.

2. The combative instinct is helpful in the food struggle. How close is the relation of the one to the other is shown by the effect of hunger: the hungry beast is wont to be savage, and the hungry man is proverbially apt to display, in an attenuated form no doubt, some of the ferocity of the hungry beast; after a good meal he subsides into an amiable, pliant mood. Even animals usually gentle scramble and fight among themselves for food, but it is among the carnivora especially that the food struggle has developed the spirit of combativeness, and it is, as we shall see, largely on account of his carnivorous propensities that man has grown to be the terrible fighter which in point of fact he is. It is true that the carnivora do not ordinarily need to fight their comparatively defenceless prey, but there can be no doubt that the instinct that leads them to seek out and destroy their prey is largely based upon and aided by the combative instinct. It must have been a combative impulse which led the first carnivorous mammal to attack its first victim, and this instinct must be of use in enabling the assailant to overcome an unusually doughty opponent. As a matter of fact, all the carnivora are ferocious. It may be pointed out in passing that the appearance of the carnivora upon the scene has probably had some influence in generating a spirit of combativeness in the species they prey upon, in that some degree of pugnacity is of service to the latter in helping them, especially if acting in combination with others, to resist their assailants.

The fact that carnivorism makes for ferocity and develops the fighting instinct has this interest—that man is himself carnivorous. Indeed, in the matter of slaughter he leaves all other animals far behind. He is the arch-slaughterer—*facile princeps*. Since the time the pre-human ape took to hunting he and his human descendants have wrought ruthless havoc among the lower animals, and at the present day man not only hunts them, but breeds them for the express purpose of destroying them, chiefly for food, partly for amusement. Many a person of gentle nature would be amazed and horrified were he at the end of a long life to see *en masse* the hecatombs of living things done to death on his behoof.

I have already alluded to two sharply contrasted aspects of the carnivorous nature. It is a fact calling for special note that in spite of the intense ferocity of the carnivora their emotional nature has its softer side. The most ferocious carnivorous mother lavishes upon her young a devotion not always to be found in the human mother. A vixen will wear herself to skin and bone in the nightly hunt for her cubs, and returning to them "red in tooth and claw" immediately fall into a purring mood. Her victims excite in her the ferocity to shatter and destroy; her young, the tenderness to shelter and protect. To the one she is the embodiment of terror and destruction; to the other of gentleness and protection. These facts are pregnant with meaning for us. They remind us that the emotional nature of carnivorous man also is compounded of extremes. He, too, has his ferocious and his tender side. The ferocious element in him is the source, as we have seen, of some of his ugliest traits, such as cruelty and revenge, while ultimately it stands for the crude egoistic principle that "might is right." The tender element, on the other hand, is the fountain of all his virtues. The great lesson to be learnt from a consideration of this duplex emotional nature, this taint of the devil, this touch of the divine, is that either side may be cultivated at the expense of the other; the average person may, according as he has been nurtured, develop into an unmanageable hooligan, fearing neither God nor man, or into an entirely respectable, law-abiding citizen.

The differing attitude towards one another of the carnivorous mother, her prey, and her cubs, is farther instructive in that it affords an example of the strong sympathies and antipathies which are displayed by animals, not only between members of different species, but even between those of the same species and more especially of the same sex. Much might be written on this interesting subject. It must suffice here to draw attention to the decisive influence of personal likes and dislikes in the conduct of human affairs. Dislikes, often amounting to virulent hatred, operate antisocially, conducing as they do, not to peace and goodwill, but to bickerings and bloodshed.

When we read of the terrible happenings in the present war we begin to wonder how far civilised man differs in his essential nature from early man in his most savage state. Though man's moral nature has doubtless undergone development since primitive times, he still retains much of the wild beast within him. We are apt to forget how very much the individual is, both intellectually and morally, the product of his environment. What would the modern civilised man be, intellectually considered, were he not, as regards his knowledge, the heir of all the ages? A modern European child brought up under the same conditions as palæolithic man would probably achieve no more in the intellectual sphere than did he. We too readily forget that a man's intellectual powers remain merely potential in the absence of the conditions needful to call them forth. This explains how it was that during the long palæolithic age man made little or no advance in knowledge, while during the last century he has more inventions to his credit than during his whole previous career.

Applying the same principle to man's moral nature, we shall the better understand how greatly that also is influenced by his upbringing. While the innate moral leanings of civilised man are doubtless superior to those of the savage, yet it can hardly be denied—so great is the influence of nurture—that an average European brought up among savages would take quite naturally to their most revolting customs, and, on the other hand, that an average "savage" reared in a European community would make a very respectable and peace-loving citizen. Let us, then, ever remember that man, like the tiger, has two strongly contrasted dispositions—the combative destructive, and the tender altruistic—at the same time not forgetting that each of these dispositions is, within due limits, an essential attribute of the normal man. The man who has no kind of fight in him, who is prepared to take any affront lying down, who is incapable of being stirred to righteous anger, is but half a man, and one wholly devoid of altruistic feeling is equally abnormal. I say that each of these dispositions is needful within due limits. The qualification is necessary, for either may be developed to a harmful degree. The combative element may be developed to the point of destructive criminality; the tender altruistic feelings may acquire such intensity as to render life intolerable—the hyper-altruist may be undone by the defects of his virtues. What, however, I desire to drive home is the fact that, taking any average individual, whether he shall be an outlaw or a decent law-abiding citizen will depend entirely upon which of the two sides of his nature shall be nurtured. Nevertheless, and in spite of all this, the most careful upbringing is powerless to change man's normal nature to its very depth, to eradicate all potentiality towards the primitive savage. Often the effect of education is but to cover with a thin veneer of moral polish the savage beneath. That the primitive passions do but slumber in the civilised man is shown not only by the savage orgies which are wont to occur in wars, revolutions and outbreaks of mob violence, and by the murderous activities of the apache, but even more perhaps by the calculated, cold-blooded cruelties of the Middle Ages, as displayed, e.g., by the agents of the Inquisition, and in the devilish treatment meted out to prisoners. Let no man suppose that human nature undergoes any essential alteration in the course of a few generations. What civilised man was in the Middle Ages such is he in his essential nature to-day. It is therefore wisest to regard the young human as compounded of the same two opposite dispositions as are found in the tiger, and as being in large measure a wild untamed creature, needing to be broken in and put through a painstaking training from earliest years if he is to be fitted for the difficult duties of good citizenship.

It is not, of course, possible by education to force everybody into exactly the same mould. Individual traits, good, bad, and indifferent, will show themselves under any system of moral training. Taking any number of persons, we may arrange them in a series according to their innate moral proclivities, beginning with the moral idiot, whom no education can greatly better, and ending with the moral genius who, with very little guidance, blossoms into the

saint. Numerous individual differences of character will be met with in such a series, many of which are only discernible and understood by intimate acquaintances, if, indeed, by them. Many a potential murderer, many a man capable of carrying out the infamies of the Inquisition, passes in society as a right good fellow and is received as a welcome guest, while many a man of kindly nature is judged harshly simply because he does not wear his heart upon his sleeve.

The Influence of Man's Hunting Career and of Tribal Life on the Evolution of the Fighting Instinct.

Let us now inquire how it has come about that man has acquired his slaughtering propensities. The fact, as fact I believe it to be, that it was the search after animal food which caused our ape-ancestor to abandon the forest, suggests that he already had a good deal of fight in him, as well as enterprise, when he entered upon his hunting career and came to compete with the carnivora for animal food. The period which elapsed between the abandonment of an arboreal life and the attainment of human-hood, say, when tribal life was fully established, was one in which the evolving man steadily increased in skill as a hunter and in which his combativeness underwent steady evolution, for success in the hunt demanded not only skill and cunning, but courage and the combative instinct.

Incidentally I may here reiterate my conviction, already advanced in this journal,[1] that it was the conditions entailed by a hunting career which brought about the evolution of the pre-human ape into man. For observe the curious situation—assuredly one of the most eventful and dramatic in the whole of man's evolution—when this creature took to hunting. Here was a being lacking the stereotyped equipment for slaughter, instinctive and anatomical, of the carnivora, but gifted with an intelligence surpassing that of any other creature, and endowed with *prehensile hands capable of giving effect to that intelligence.* It was a situation in which intelligence counted in the life-struggle as it had never counted before, and it inevitably led to the evolution of a higher type. This agile, intelligent, hand-endowed precursor of man was compelled to rely upon his intelligence in hunting his prey; for blind instinct he had to substitute strategy; for natural weapons, weapons made by hand. Once the pre-human ape started on his career of intelligent, as against instinctive, hunter, he began a struggle in which it was inevitable that a higher and ever higher grade of intelligence should continue to evolve by natural selection until sufficient mental capacity had been attained to render its possessor supreme in the chase.

When tribal life with its attendant inter-tribal warfare was established—a warfare in large measure at least for the possession of hunting grounds and districts rich in valuable vegetable foods—the evolution of the fighting instinct received a further stimulus, for the more courageous and warlike tribes tended to wipe out the less courageous and more peaceful.

Here it is necessary to point out that from the evolutional standpoint inter-tribal and modern warfare present a striking contrast. In the former not only do all, or practically all, the men of the tribe take part in the fight, but the percentage loss of the vanquished is generally much greater than that of the conquerors. Defeat may, indeed, mean the partial annihilation of the vanquished, if not after a single battle, at any rate after a process of guerilla warfare waged it may be through years. Thus the effect of inter-tribal warfare has been to further the evolution of the bravest, and in even greater degree (I may here add) of the most intelligent, tribes. But while, as I have elsewhere insisted,[2] inter-tribal warfare has furthered man's psychic evolution, civilised warfare is eugenically hurtful—for whereas individual tribes can annihilate one another, this is not possible with modern civilised nations. When two such nations engage one another in war, the percentage mortality for each entire nation is much the same and has little or no ultimate effect upon the proportionate population of each nation. The effect of warfare between modern civilised nations cannot therefore lead to the survival of a superior nation at the expense of an inferior one. Its effect is rather to work against evolution by causing the elimination of the best physical types (the First Napoleon is said to have taken two inches off the stature of the French nation) and of those who display the most courage and daring. Were civilised warfare carried on by voluntary armies alone the effect would be to cause a disastrous elimination of the bravest; I say disastrous, for assuredly courage is one of the noblest attributes of man. Even with compulsory service a large proportion of the least brave manage to avoid the danger zone.

With the establishment of inter-tribal warfare the fighting became the most terrible the world had yet known. No longer prompted by blind instinct and carried on with nature's weapons (teeth, claws, horns, and the like), in which victory was generally to the physically strongest, it became a fight with hand-made weapons, wielded warily and with deliberation, a fight in which not only courage but intelligence played a part such as it had never played before; for it was intelligence which fashioned the weapons and directed their use and which planned the organised attack.

The chief factors in the evolution of the fighting instinct in man have been the reproductive instinct, the search after animal food, and inter-tribal warfare. The ultimate effect of these factors has been to make man of all vertebrates the most inveterate fighter. Not only does he wage incessant warfare on other species, destroying infinitely more than any other vertebrate, but he also fights persistently with members of his own. Except in the struggle of rival males for the possession of the female, there is comparatively little intra-speciem fighting among the vertebrates: whether gregarious or otherwise, members of the same species live together in a comparative harmony. Man, on the other hand, from the dawn of the tribal period up to the present time, has made incessant warfare upon his fellows.

When we come to compare warfare as waged between civilised nations with primitive inter-tribal warfare we find that far from its terrors being mitigated they are becoming greater than ever. Human ingenuity has so exhausted itself in the endeavour to devise the most deadly methods of destruction that it is difficult to imagine anything more terrible than those employed in the present war. It is true that modern warfare has at various epochs been robbed of some of its terrors by the spirit of chivalry, though it must be confessed that, much as we may commend that spirit, there is something incongruous in two armies setting about to kill one another in a gentleman-like way, with perfect willingness to be good friends after vast numbers of their comrades have been mutilated and slaughtered. But even among the most chivalrous foes some degree of devilry and frightfulness is apt to creep in, and if the spirit of chivalry is lacking on the one or other side, then, indeed, is man seen at his worst, as one compared with whom the famished tiger maddened with blood lust is as an innocent babe.

(To be conc'uded.)

[1] Man's Mental Evolution, Past and Future, THE LANCET, 1913, i., 1260, 1333, 1408, 1473. [2] Ibid.

URBAN VITAL STATISTICS.

(Week ended Sept. 8th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 11·2, against 10·6 per 1000 in each of the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 11·9, or 1·3 per 1000 above that recorded in the previous week; among the remaining towns the death-rates ranged from 3·6 in Gillingham, 4·5 in Eastbourne, and 5·6 in Wimbledon to 17·1 in Middlesbrough, 18·7 in Aberdare, and 18·9 in Gateshead. The principal epidemic diseases caused 427 deaths, which corresponded to an annual rate of 1·3 per 1000, and comprised 320 from infantile diarrhœa, 35 from whooping-cough, 31 from measles, 29 from diphtheria, 10 from enteric fever, and 2 from scarlet fever. The deaths from diarrhœa, which had steadily increased from 53 to 312 in the seven preceding weeks, further rose to 320, and included 90 in London, 23 in Liverpool, 14 in Manchester, and 12 each in Salford, Leeds, Sheffield, and Hull. The 652 cases of scarlet fever and the 1041 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 30 and 19 above the numbers remaining at the end of the previous week. Of the deaths in the 96 towns, 133 resulted from violence. The causes of 24 deaths were uncertified, of which 4 were registered in Liverpool and 3 in London.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual death-rate was 12·6, against 10·3 and 11·2 per 1000 in the two preceding weeks. The 279 deaths in Glasgow corresponded to an annual rate of 13·0 per 1000, and included 16 from infantile diarrhœa, 13 from whooping-cough, 4 from measles, and 2 each from scarlet fever and diphtheria. The 73 deaths in Edinburgh were equal to an annual rate of 11·5 per 1000, and included a fatal case of whooping-cough and another of infantile diarrhœa.

Irish Towns.—The 137 deaths in Dublin corresponded to an annual rate of 17·9, or 3·7 per 1000 above that recorded in the previous week, and included 21 from infantile diarrhœa and 2 from whooping-cough. The 100 deaths in Belfast were equal to an annual rate of 13·3 per 1000, and included 8 from infantile diarrhœa, 4 from whooping cough, and 1 from enteric fever.

Correspondence.

"Audi alteram partem."

THE PHYSIOLOGICAL AND ANTISEPTIC ACTION OF FLAVINE.

To the Editor of THE LANCET.

SIR,—The above title appearing over an article by Mr. Alexander Fleming in your issue of Sept. 1st is obviously a misnomer, and one wonders why it was not frankly headed "A Warning Against the Use of Flavine"; for in it there are gathered together such assertions and implications as would seem best suited to deter anyone from testing the therapeutic properties of flavine antiseptics. Unfortunately for Mr. Fleming, his experimental facts relevant to the local use of an antiseptic, in so far as they were not contained in our original article,[1] had practically all appeared in a second communication,[2] which was published six weeks before Mr. Fleming's. To take up all his dialectic points would be a waste of time and space, but the more glaring will be referred to. Early in the article he states, "This antiseptic has been introduced into practice purely as the result of laboratory experiments." What does Mr. Fleming mean by this statement? It can convey only one of two meanings—either that Mr. Fleming would prefer an antiseptic to be introduced without any such preliminary test—as he presumably earns his living by laboratory work it may be assumed that this is not his intention—or, secondly, it must signify that by publishing our original paper we embarked on a warm recommendation of the substance for practical trial at a time when we had no other evidence in its favour than the results of laboratory tests. That this was not the case is proved by parts of our original paper of which Mr. Fleming takes no notice. Thus the favourable opinions of the three independent sets of investigators, who had already carried out most extensive preliminary clinical trials, are quoted; two of these have also been published separately.

To come now to Mr. Fleming's experiments. First, those concerning the action of flavine on human blood. He states that it agglutinates red blood corpuscles (a fact to which we drew attention in our original paper when touching on the question of the toxicity of flavine administered intravenously), but he does not add whether he tested this effect on red cells suspended in serum or in saline—a most important point, and one without which the appearance of precision lent by his numerical values is purely fictitious. Then flavine is stated to delay the coagulation of the blood; apparently this should suit the school of which Mr. Fleming is a cadet, for he writes, "Sir Almroth Wright has for many years combined with his hypertonic salt solution some citrate of soda to prevent clotting of the lymph in a wound and flavine may be beneficial in this way"; but he hastens to add "this action of flavine, however, must be borne in mind when it is applied to freshly incised wounds." Can this mean that Mr. Fleming dares to doubt his master in regard to the use of anti-coagulants, but that he feels himself at liberty to express his views in the case of flavine, although not when citrate and salt are under discussion? It is worth noting here that a surgeon of great experience has recently recorded his commendation of flavine precisely because of its property of causing coagulated lymph to appear in wounds. In any case, those who have so far had no personal experience of flavine can be well assured that the half-veiled suggestion of its tending specially to the production of hæmorrhage in wounds possesses no basis of fact. As regards the action of flavine on leucocytes, we have also anticipated Mr. Fleming in an investigation on the effects of prolonged contact, and the gist of our observations has been that even such leucocytes as have remained for a considerable time (two hours) in contact with a concentration of flavine, which is much more than sufficient to *inhibit growth* of organisms, are yet able to exert phagocytic action. On the other hand, concentrations of mercuric chloride, which were more harmful to the leucocytes than flavine, lacked all inhibitory action on the bacteria. This property of inhibiting bacterial growth, which is exhibited by the flavine antiseptics up to very high dilutions, appears to us to be of the greatest importance from the therapeutic standpoint, since it affords the possibility, especially in recent wounds, of holding the organisms in check while enabling the natural defensive mechanisms of the body to come into operation at the same time. Mr. Fleming, however, seems to have no use for such a conception; an antiseptic must kill every organism or it possesses no value for him.

His long-contact experiments with leucocytes which have been rendered moribund through being kept *in vitro* need not detain one. Mr. Fleming has accused us of having "apparently paid no attention to the time factor" in arriving at a figure which we used—viz., the "therapeutic coefficient," or ratio between the concentration of antiseptic which interfered with phagocytosis, and that which killed organisms suspended in serum. (We are dealing here with the actual definition which we gave and not with that which, for the purposes of his argument, Mr. Fleming assumes that we used.) There is little point in his contention unless Mr. Fleming can show that the majority of efficient phagocytes—i.e., those which are capable both of phagocytosing bacteria and then subsequently of destroying them—after having made their diet fail to return to the tissues, but sit down on the free surface of the wound until digestion is complete; Colonel Bond's observations hardly suggest such a view, although no one is very well informed on the matter. The really important fact, however, is that in the case of the flavine antiseptics there exists such a wide range between the weakest concentration which will suffice to inhibit and eventually to kill organisms in a serous medium on the one hand, and on the other, the great strength which is required to paralyse phagocytosis, hence antiseptic action and the natural defensive processes can be expected to go on side by side. No other antiseptic which has been tested affords results which justify the belief that with it such will occur to anything approaching the same extent. Experiments on the antiseptic action of flavine in blood and pus were described in our first paper, and Mr. Fleming's work adds nothing new beyond revealing further his inability to grasp the conception that restriction of bacterial activity by means of a chemical agency would represent a valuable therapeutic achievement. The same remark applies to the observation, which we have already recorded in our second paper, that a great increase in the number of organisms necessitates a somewhat higher concentration of antiseptic in order to effect sterilisation; the degree of this increase was well seen in one of our experiments in which a 20,000-fold increase of bacteria necessitated only about a $2\frac{1}{2}$-fold increase in strength of antiseptic! As regards intravenous injection of acriflavine, we have made numerous observations on similar lines to Mr. Fleming's, but are we to be blamed for not having published them forthwith, seeing that *we have never recommended the use of flavine in order to produce antiseptic action at a distance from the site of introduction of the substance.* We did mention that 300 c.c. of a 1 : 1000 solution intravenously had produced no ill-effect in an adult, but this statement was judged necessary in order that no suspicion might arise as to the possibility of toxic effects following absorption of the substance, which might well occur in a wound. The possibility of conferring antiseptic properties on the urine is an important problem which has already engaged our attention; Mr. Fleming's negative results demonstrate only that he seems to have little conception of the necessity of adjustment of the reaction and other factors in order to secure optimum conditions. In other words, here, as elsewhere, Mr. Fleming's sole aim appears to be an attempt to discredit our work, and to deter those who might be inclined to test the value of flavine by asserting that it has no possible value. The unique property of being intensified in its antiseptic effect by serum seems to be so commonplace and contemptible a fact in the mind of Mr. Fleming that he passes it by almost without comment. Again, the injection of flavine locally into tissues has always been recommended with a view to obtaining *contact* between antiseptic and organisms; it has never been suggested that that portion of the dye which had been bound by the muscle fibres was likely to exercise antiseptic effects. Mr. Fleming's minced-meat experiment is a very old one; as is well known minced tissue absorbs all sorts of substances, including the normal protective constituents of the body fluids—i.e., complement, opsonin, &c., but as comparatively little of a wound surface is likely to be left by the surgeon in a state of

[1] Browning, Gulbransen, Kennaway, and Thornton, Brit. Med. Jour., Jan. 20th, 1917.
[2] Browning, Gulbransen, and Thornton, Ibid., July 21st, 1917.

"mincemeat" the experiment does not appear strikingly apposite. It appeared to be a hard enough task to demand of an antiseptic that it should not be "quenched" in a serous medium, but now that it has been shown that flavine fulfils this condition, the critic at once complains that it will not act in the presence of excess of mincemeat—this is, indeed, an "offensive defensive" on the part of the critic!

The "therapeutic coefficient" already mentioned claims much of Mr. Fleming's attention; perhaps the term is to him unpleasantly reminiscent of the ill-fated "opsonic index." He says: "In regard to flavine, this coefficient, as arrived at by the authors of the expression, gives information so misleading that as a practical test it is quite valueless." Now let it be noted exactly what information we did profess to derive from this coefficient ("TC"); in our first communication we stated "if we find an antiseptic which possesses a high TC value and which at the same time is powerfully bactericidal in the presence of serum, then we know that, as compared with another compound yielding a low TC value, the former substance can be employed in a much higher concentration *qua* bactericidal (and, we might have added, *antiseptic*) efficiency without at the same time damaging the natural defensive mechanism of phagocytosis." One sentence later, in order to place TC in its proper perspective—from which, however, Mr. Fleming has no compunction in wresting it—we continued: "It must be recognised, however, that the susceptibility of different tissues toward any chemical compound may vary greatly ..... we considered that a further valuable indication would be afforded by the behaviour of a delicate epithelial membrane, such as the conjunctiva, towards different dilutions of the antiseptics." In effect, we subjected a number of antiseptics to a certain series of tests; then, regarding all the results, we attempted to form a conception of the average of properties. In some of these tests, such as the estimation of bactericidal potency and the influence of serum on the latter, known antiseptics, such as phenol and mercuric chloride, yielded results so completely in accord with those of other observers as to afford conviction that our methods were sound; we had also discovered that the flavine antiseptics were distinguished from the rest by outstanding features. When on being tested clinically by several independent investigators they were found to be capable of highly successful therapeutic application, then, and not till then, did we conclude that the distinctive behaviour of the flavine compounds in laboratory tests was worthy of publication from a practical point of view, and we added the statement that "the recommendation of this substance for clinical use, based on the results of the laboratory tests, has appeared well justified." Mr. Fleming has had the substance in his hands (it may be remarked that he obtained his original sample from me personally, although the first evidence of his opinion of it reached me from your pages!), and he has concluded that "the theoretical basis for the use of flavine is thoroughly unsound, and there seems nothing to specially recommend this substance as an antiseptic for use in septic wounds." In other words, any surgeon who wishes to employ an antiseptic in wound treatment, and who resorts to Mr. Fleming, as a scientific tipster, in order to be informed how the backing goes, will be told that flavine does not have one point in its favour. It is likely that the surgeon will desire to know what has been Mr. Fleming's skill in the matter of forecasting previous "events," and he will learn that Mr. Fleming's strongest tips in the past have been *the opsonic index as a guide to diagnosis and treatment*, and *"Fleming's modification" of the Wassermann reaction*—surely two of the most sorrowful "wrong 'uns" that there ever were. Mr. Fleming's fear of arousing further enthusiasm in matters of scientific medicine can well be understood, but he ought really, in the first instance, to set right his own tangled accounts before seeking to reform others.

I am, Sir, yours faithfully, C. H. BROWNING.

PSYCHIATRY IN ENGLAND.

To the Editor of THE LANCET.

SIR,—Dr. Weatherly, in his letter in your issue of Sept. 8th, states that "the recovery-rate of insanity is no higher to-day (in asylums) than it was in the decade 1865 to 1875." Perhaps Dr. Weatherly will excuse my saying that this conclusion is of little value if it has been inferred from a recovery-rate calculated on the total number of admissions irrespective of the ages of those admitted, as the recovery-rates of all asylums are now adversely affected by the increased number of senile cases admitted.

Surely there must be few, if any, asylums in which "the want of proper departmentisation of cases" occurs; it is an essential feature of the new segregate type of institution, and in many years' asylum experience I have never seen patients with a suicidal tendency placed "on the side of the asylum with the worst cases" unless those particular patients exhibited other symptoms that made them manifestly unsuitable companions for the ordinary type of suicidal case.

With regard to the treatment of functional mental disturbances, there are functional cases *and* functional cases, and relative to many there is a world of wisdom in the following aphorism of the late Sir Thomas Clouston: "What is good is not always pleasant in moral as well as in medical treatment."—I am, Sir, yours faithfully,

H. DE M. ALEXANDER.

Aberdeen City Mental Hospital, Sept. 10th, 1917.

TREATMENT OF THE INVALIDED SAILOR OR SOLDIER.

To the Editor of THE LANCET.

SIR,—May I be allowed to point out an omission in the article on the above in THE LANCET of Sept. 8th, p. 404. The full statement is, "Payment being made at the dividend rate found to be payable on that scale out of the Central Medical Benefit Fund for the year" (Memorandum 233/I.C., par. 7, lines 7, 8, and 9). The very same words are used in Memorandum 234/I.C., "For Issue to Doctors," par. 5, lines 7, 8, and 9. The *dividend* rate is only 90 to 92 per cent. of the scale, and the Memorandum means that the Treasury will bring up any deficit to this dividend rate and not to the full remuneration quoted in THE LANCET—viz., visit 2*s.*, &c. I have reason to believe that means may be taken to prevent over-visiting.

Is it necessary to say that the rate of remuneration quoted is too low for the increased and increasing cost of living and carrying on of practice?—I am, Sir, yours faithfully,

JAMES GARDNER,
Chairman of the Burnley Panel Committee.

Burnley, Sept. 9th, 1917.

ORIGINALITY AND ENTERPRISE.

To the Editor of THE LANCET.

SIR,—The article entitled as above in your issue of to-day is incorrect when it is stated that the Chemical Society is the only British body which publishes an abstract journal. "Physiological Abstracts," which is published by H. K. Lewis and Co. for the Physiological Society, is now in the second year of its existence, and constitutes what I conceive to be a praiseworthy effort to accomplish what the writer of your article desires. Although it does not deal with the immense mass of available clinical literature, it nevertheless interprets the word physiology in a wide sense, and includes an international survey of physiology and allied sciences from the academic point of view, and also, to use a good old phrase, as the Institutes of Medicine. I am asking the publishers to forward you a copy of its latest issue. You were good enough to write a friendly notice of this new journal when it first appeared. Perhaps you will be able to see your way to glance through the one I send so that you may be able to corroborate what I say regarding its merits or otherwise. It is regrettable that the facts were not ascertained before the lack of British enterprise was lamented.

I am, Sir, yours faithfully,

W. D. HALLIBURTON,
Editor of "Physiological Abstracts."

King's College, London, Sept. 8th, 1917.

*** We were perfectly aware of the facts. We have received and reviewed "Physiological Abstracts," and again recommend this serial work cordially to our readers. But we were considering in our article the publication of abstracts dealing with medicine generally, as the papers in the *Journal of the Chemical Society* deal with chemistry generally. It may be that this is too high an ideal, and that we must rely on the separate branches of medical science for systematised reports on their individual work. In such a category "Physiological Abstracts" would enjoy a high place.—ED. L.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Died of Wounds.

Capt. J. H. Bampton, R.A.M.C., attached Royal Field Artillery, was educated at Birmingham University and at Berne, and qualified in 1911. He held the appointment of house surgeon at the Birmingham General Hospital, and prior to joining up was in practice at Gravelly Hill, and was assistant school medical officer for Birmingham.

Wounded.

Capt. L. Ball, R.A.M.C., attached Royal Berks Regiment.
Capt. W. Stobie, R.A.M.C., attached Oxford and Bucks Light Infantry.
Capt. A. J. V. Mathews, R.A.M.C.
Capt. W. H. Cornelius, R.A.M.C., attached Worcester Regt.
Capt. A. W. Matthew, R.A.M.C.
Capt. J. A. Smith, R.A.M.C., attached Gordon Highlanders.
Capt. H. G. Janion, M.C., R.A.M.C., attached Royal Horse Artillery.
Capt. J. C. Sale, M.C., R.A.M.C.

Missing.

Lieut.-Col. G. S. Williamson, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported :—

Major G. B. C. Irvine, 9th Bhopal Infantry, India Army, died of wounds, eldest son of the late Surg.-Gen. G. J. Irvine, R.N.

Private J. H. Yelf, Canadian Infantry, killed in action, youngest son of the late Dr. L. K. Yelf, of Moreton-in-Marsh, Gloucestershire.

A. J. E. Warburton, London Regiment, died of pneumonia, son of the late Dr. A. Warburton, of East Molesey.

Major J. H. Ratton, Royal Garrison Artillery, killed in action, eldest son of Lieut.-Col. J. J. L. Ratton, late I.M.S., of Blackheath, S.E.

Private D. M. Jacob, Canadian Expeditionary Force, killed in action, youngest son of the late Dr. A. H. Jacob, of Dublin.

Lieut. G. E. Story, Royal Engineers, died in hospital, son of the late J. Story, M.R.C.S., &c., of Westbourne Terrace-road, London.

Second Lieut. J. A. Humphreys, Royal Field Artillery, killed in action, youngest son of Lieut.-Col. C. E. Humphreys, R.A.M.C., J.P., county medical officer for Montgomeryshire.

Second Lieut. T. S. Hinnell, Suffolk Regt., killed in action, eldest son of Dr. J. S. Hinnell, Bury St. Edmunds.

Lieut. R. F. Lawrenson, Cheshire Regt., died of wounds, only son of Dr. H. F. Lawrenson, of Muswell Hill, London.

THE HONOURS LIST.

Victoria Cross.

The much-coveted distinction of the Victoria Cross has been conferred upon the following member of the medical profession, who is, alas, no longer with us :—

Temp. Capt. Harold Ackroyd, M.C., late R.A.M.C. (attached Royal Berks Regiment).

For most conspicuous bravery. During recent operations Captain Ackroyd displayed the greatest gallantry and devotion to duty. Utterly regardless of danger, he worked continuously for many hours up and down and in front of the line tending the wounded and saving the lives of officers and men. In so doing he had to move across the open under heavy machine-gun, rifle and shell fire. He carried a wounded officer to a place of safety under very heavy fire. On another occasion he went some way in front of our advanced line and brought in a wounded man under continuous sniping and machine-gun fire. His heroism was the means of saving many lives, and provided a magnificent example of courage, cheerfulness, and determination to the fighting men in whose midst he was carrying out his splendid work. This gallant officer has since been killed in action.

(The announcement of the death of Captain Ackroyd, who was a student at Guy's Hospital, and practised at Royston, Herts, was made in THE LANCET of August 25th, 1917, p. 331.)

"OUR DAY," 1917.

An urgent charitable appeal for aid is being made on behalf of the Joint War Committee of the British Red Cross Society and the Order of St. John. The danger is that "Our Day," fixed for Oct. 18th, may suffer if helpers in their thousands do not come forward. Women in all parts of the kingdom who have sacrificed their leisure in former years are now giving their whole time to some phase of war work. Their places must be filled. Organising committees have vacancies, there is urgent need for sellers of "Our Day" emblems, and suggestions for any method of raising funds, by concerts, social gatherings, or sports, in particular localities will be gladly welcomed. The needs of the Red Cross work were never greater, and they are increasing every day. "Our Day" is everybody's opportunity to contribute to the comfort, care, and well-being of the Empire's wounded and stricken heroes. Already the self-governing Dominions, Crown Colonies, and Protectorates have thrown themselves heartily into the movement, which has the best wishes of the King and Queen and Queen Alexandra. Red Cross activities at the present moment are costing more than £5 every minute. The money is spent in minimising suffering—surely the noblest aim a people can be invited to associate themselves with, especially when it is their own kith and kin who are benefiting. To buy and wear a Red Cross emblem on Oct. 18th will be the outward sign of sympathy. To do something in the intervening weeks will be really practical support. Miss C. May Beeman, the organising secretary, will welcome any offers of assistance addressed to 10, West Bolton Gardens, London, S.W. 5.

THE MEDICAL EXAMINATION OF AVIATORS.—In October of last year the Army Medical Service appointed a special medical board for the examination and selection of flying officers. This board was composed partly of army doctors and partly of civilian experts, and has been working continuously since it was formed. Each candidate is examined by three different doctors, and their reports are then assessed by one or two other doctors, the candidate being again examined if necessary. Various tests have been employed, Bárány's amongst others, but experience has shown that it is not advisable to lay too much stress on any one test as a cause for acceptance or rejection. The details of the medical examination for flying officers in this country have been formulated after a year's experience, and will be submitted in due course to the Air Board.

It is not to be assumed that finality has yet been reached as to the medical examination and testing of candidates for flying work. This subject requires a more thorough knowledge of the disabilities which affect flying men than we possess at present. It is hoped that further progress will be made in this direction by the study of these disabilities in a special hospital for flying officers which will soon be available. When the type of man who has broken down and the various disabilities which develop in air work have been more thoroughly studied, the selection of the best type of candidate will be carried out with more knowledge and precision than is possible at present.

2ND EASTERN GENERAL HOSPITAL, BRIGHTON.—As one of the many adjuncts of the 2nd Eastern General Hospital at Brighton there was opened on August 29th the East Hove Schools, which will be used solely by convalescents, or walking cases, the object being as far as possible to relieve the mother hospital near by for the reception of severe surgical cases. Accommodation has been provided for 165 beds, and 155 of these were occupied at the little informal opening ceremony. There is no operating theatre, but there is a finely equipped dressing-room. The school swimming-bath is not to be used at present.

THE EMPLOYMENT OF AMERICAN PRACTITIONERS IN MILITARY HOSPITALS.—In certain Commands it has been decided to supersede the British civilian practitioners at present acting as the staff by American medical men. In this way more British practitioners will be available to meet the pressing home needs, which have been made clear by the work of the Central Medical War Committee.

OBITUARY OF THE WAR.

JOHN BROMLEY RAWLINS, M.B., B.S. LOND.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. B. Rawlins, who was killed in action in France on August 16th at the age of 27, was the elder surviving son of the late John Rawlins, of Erdington, Birmingham, and Mrs. Tom Green, of Warren Drive, New Brighton. On leaving Bromsgrove School he studied medicine at St. Mary's Hospital, London, graduating M.B., B.S. in 1914. Shortly after the outbreak of war he was granted a commission in the Royal Army Medical Corps (Territorial Force) and was attached to the staff of the 3rd London General Hospital, Wandsworth. In the autumn of 1915 he went to France, where he saw continuous service up to the time of his death, which was caused by the bursting of a high-explosive shell in a dressing station. His commanding officer writes of him as a charming comrade and a hard-working and capable officer.

Captain Rawlins was engaged to be married to Sybil, only daughter of Dr. Oliver Withers, of Sidmouth, Devon.

CHARLES ALFRED WHITING POPE, M.A., M.B. CAMB.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain C. A. W. Pope, who was officially reported "Missing, believed drowned" on the occasion of the torpedoing of the transport *Transylrania*, on May 4th, was in his fortieth year and fourth of the ten sons, originally serving, of Alfred Pope, F.S.A., J.P., of Wrackleford, Dorchester. He received his education at Twyford School and Charterhouse, whence he proceeded to Trinity College, Cambridge, graduating in honours in 1902. He obtained his medical degrees from St. Bartholomew's Hospital a year later, and after serving as house surgeon to the Devon and Cornwall Hospital, Plymouth, went to South Africa as resident to the Somerset Hospital, Cape Town. Returning to England in 1907 he practised in partnership at Rugby, and subsequently in Hastings and St. Leonards. On the outbreak of the war he offered himself for active service, and obtained a commission in the Royal Army Medical Corps. After two years' service, first at Seaford as medical officer to the 7th South Wales Borderers, and then in Aldershot, he was ordered to Egypt in April, 1917, and it was whilst he was on his way to take up this appointment that he lost his life. When the boat was struck he was in the ship's hospital, and after seeing that the patients were safe he went to the parade deck. Shortly afterwards he heard that several had been wounded down below by the explosion, and Captain Pope went with a party to rescue them. Whilst dressing their wounds he went down with the ship. The facts are stated by two of his companions, one of whom was working with him up to a few minutes before the vessel sank.

Captain Pope married, in 1909, Marion Ruth, eldest daughter of the late Captain J. J. A. Gravener, R.N., of Avenue House, Dorchester. His widow, with two sons and a daughter, survive him.

BENTLEY MOORE HUNTER, M.B., CH.B. GLASG.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain B. M. Hunter, who was killed in action on July 31st, aged 29 years, was the fifth son of Charles Hunter, B.A., of Drochduil Public School, Dunragit, N.B. Before leaving the Public Elementary School he gained three bursaries, and afterwards attended the High School, Stranraer, for three years. Here he early showed a predilection for the science side of the instruction, and on leaving joined the medical classes at Glasgow University. He was a student of some distinction, prizeman and medallist, and graduated before being of age to practise. On attaining the age of 21 he acted as assistant at Consett, Durham, for three years; and later to Dr. R. Wallace, of Saltcoats, Ayrshire, with whom he continued until he joined the Royal Army Medical Corps in May, 1915. His first year in the Royal Army Medical Corps was passed in Lemnos and Egypt, and during the rest of his service he was attached to a regiment which has taken part in several of the most strenuous engagements. He had just finished dressing a wounded man when he was struck himself and died immediately.

Captain Hunter's chief writes of him: "His attention, agreeable and quiet manner, were greatly appreciated by his patients, and he showed that he was well qualified in his profession. He will be greatly missed in this neighbourhood."

HENRY YOUNG CAMERON TAYLOR, M.B. EDIN., F.R.C.S. EDIN.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain H. Y. C. Taylor, who died on August 25th of illness contracted in a military hospital, was third son of the late Alexander Taylor, of Edinburgh. He graduated M.B., C.M. Edin. in 1896, taking his Fellowship there in 1905. After holding positions as clinical assistant at the Golden-square Throat Hospital and the Central London Ophthalmic Hospital, he was resident at the Hospital for Sick Children, Great Ormond-street, and the Huddersfield Infirmary. He served as a civil surgeon in the South African Field Force, when he contracted enteric fever, but recovered and remained at his post. In 1909 he settled at Bexhill-on-Sea, where he built up a large practice. After the outbreak of hostilities he worked under the French Red Cross at Dunkirk for two months, joining the Royal Army Medical Corps in April, 1915. He was attached for a while to the Hampstead Military Hospital, served on the hospital ship *Britannic*, and was then posted to the Royal Victoria Hospital, Netley, where he served on the surgical staff up to the time of his illness. He was taken suddenly ill with what was at first considered to be influenza; after partial recovery he went home on sick leave, passing into a painful condition of septicæmia, to which he ultimately succumbed. One who knew him writes of Captain Taylor: "He won the affection of his patients by his invariable kindness and untiring devotion to their welfare, while their confidence was

secured by many proofs that he kept himself well informed with modern progress. His loss has been keenly felt by a large circle of friends, by none more than the wounded soldiers, to whom he devoted unsparingly the best he had to give. Taylor's surgical results were excellent; his handling of the severe septic cases by large incisions and free drainage almost abolished secondary hæmorrhage in his wards at Netley. He was a loyal and generous colleague."

Captain Taylor married in 1911 Eothen, eldest daughter of the late Francis E. Colenso and grand-daughter of the late Bishop Colenso.

ANDREW BEACONSFIELD ROSS, M.A., M.D. EDIN.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant A. B. Ross, who was killed in action in France on August 6th at the age of 39, was the son of James Ross, J.P., of Invergordon, Ross-shire, and was educated at Edderton Public School and at Tain Academy. He was a brilliant scholar at Edinburgh University, graduating M.A. in 1898, M.B., Ch.B. in 1902, and M.D. in 1906, gaining the Vans Dunlop scholarship in surgery and physiology and being elected president of the Royal Medical Society. After qualifying he held the post of house physician to the Hospital for Sick Children, Great Ormond-street, as well as resident posts at the Royal Infirmary, Edinburgh, and the Glasgow Maternity Hospital. After a voyage to South America and some experience as assistant in general practice, he went into partnership with Dr. J. E. Judson, of Ashton-under-Lyne, with whom he was associated for six years.

His partner writes of him as a man of exceptional ability, all of whose work was done with a conscientious thoroughness coupled with kindness and sympathy with suffering. He will be much missed in Ashton.

HOSPITAL MAGAZINES.—With the autumn number of the *Craigleith Chronicle* (2nd Scottish General Hospital, Craigleith, Edinburgh, price 6*d*.) this magazine ceases to be a monthly publication, but the organisers hope to continue it as a quarterly, and a Christmas number is promised. The current issue includes the story of the capture of Baghdad, from the pen of Captain the Rev. Dr. W. Ewing, M.C. The illustrations are particularly good. An editorial note states that the total number of men admitted to Craigleith and its auxiliaries from the beginning of the war, up to and including July 2nd, 1917, amounts in all to 35,829, Craigleith receiving 30,237.—The *Gazette of the 3rd London General Hospital* (Wandsworth, S.W. 18. Price 4*d*.), which, like the preceding, was among the first of the magazines of this class to be published, maintains a high standard, and the illustrations have considerable merit. "Strafe the Flies," by Sergeant H. J. Gilby, is the title of a popular study of *Musca domestica*, and gives in a familiar manner much sound information regarding the house-fly as a disease carrier.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: H. E. Cockcroft, W. S. Kidd, W. Templeton.

ROYAL NAVAL VOLUNTEER RESERVE.

B. J. Geekie to be temporary Dental Surgeon.

ARMY MEDICAL SERVICE.

Col. H. N. Thompson, C.M.G., D.S.O., to be temporary Surgeon-General while employed as Director of Medical Services.

Lieut.-Col. and Bt. Col. S. L. Cummins, C.M.G., and Lieut.-Col. S. F. St. D. Green to be temporary Colonels while employed as Assistant Directors of Medical Services.

Temp. Lieut.-Col. C. E. Doherty, Canadian A.M.C., to be Assistant Director of Medical Services.

Temp. Major F. S. Burke, Canadian A.M.C., to be Deputy Assistant Director of Medical Services

Col. (temp. Surg.-Gen.) G. D. Hunter, C.B., C.M.G., D.S.O., is retained on the Active List and to be supernumerary.

Assistant Directors of Dental Services.—Graded for purposes of pay as Deputy Assistant Directors of Medical Services, and to be temporary Lieutenant-Colonels while so employed: Temp. Major O. K. Gibson, Temp. Major A. A. Smith, Temp. Major J. E. Holmes, Temp. Major W. J. Bentley.

Graded for purposes of pay as a Deputy Assistant Director: Temp. Major C. Brown, Canadian Army Dental Corps.

Deputy Director of Dental Services.—Graded for purposes of pay as an Assistant Director of Medical Services, and to retain the rank of temp. Lieutenant-Colonel whilst so employed: Temp. Major (temp. Lieutenant-Colonel) O. K. Gibson, from an Assistant Director of Dental Services

Deputy Assistant Director of Dental Services.—Graded for purposes of pay as a Deputy Assistant Director of Medical Services, and to be temporary Major while so employed: Temp. Capt. A. W. Winnett.

ROYAL ARMY MEDICAL CORPS.

C. T. Parsons to be temporary Lieutenant-Colonel while employed at Fulham War Hospital.

Lieut.-Col. A. J. Collis, Cyclist Battalion T.F., to be temporary Lieutenant-Colonel.

Capt. C. Helm, M.C., relinquishes the acting rank of Lieutenant-Colonel on reposting.

The undermentioned are granted temporary rank: As Lieutenant-Colonel: Lieut.-Col. James Godding, London Regiment (T.F.). As Major: Major W. E. M. Corbett, Devon. Regiment (T.F.).

To be Acting Lieutenant-Colonels: Major W. L. Baker and Capt. O. C. P. Cooke (while in command of a Casualty Clearing Station); Major W. F. Ellis, Capt. H. W. Carson, and Capt. E. C. Lambkin (while in command of a Field Ambulance).

Temp. Capt. O. Challis to be temporary Major.

Temp. Capt. J. R. Goodall, Canadian A.M.C., to be acting Major while specially employed.

T. E. K. Stansfield to be temporary Honorary Major.

Lieut. R. H. C. Pryn to be temporary Captain.

Temporary Lieutenants to be temporary Captains: W. H. Rayner, M. A. Spotswood, G. D. Gripper, A. C. Dixon, C. R. Howard, G. A. Lamont, G. J. C. Ferrier, R. W. Miller, D. A. Farquharson, R. G. Michelmore, E. N. Glover, C. T. Todd, H. H. O'Heffernan, C. F. Davey, R. L. Sinclair, F. J. McCarthy, V. L. Evans, A. Grant, S. J. Brennan, R. D. Brennan, C. A. Holburn, F. C. Ormerod, G. P. H. Huddy, J. H. D. Webster, R. M. Gordon, A. F. W. Dunning, E. D. S. Heyliger, N. Kennedy, A. Wilkin, G. J. R. Carruthers, K. D. Melville, E. Burstal, T. W. E. Ross, W. J. Crow, T. McL. Galloway, W. S. McLaren, E. R. Eatock, W. H. Peacock, N. S. Carmichael, E. S. Jeffrey, M.C., Canadian A.M.C., J. McMurray, E. C. White, N. E. Kendall, K. G. Haig, J. W. B. Hanington, H. M. Churchill, J. McFadyen, E. O. Marks, T. Stordy, F. G. M. Simpson, D. E. Scott, R. W. Davies, M. E. Delafield, H. L. Messenger, A. Dingwall, J. W. Applegate, R. H. S. Marshall, P. Rose, A. L. Husband, H. K. Graham-Hodgson, E. G. B. Carpenter, D. S. Pracy, B. H. Swift, D. L. Spence, H. B. Scargill, E. R. Holborow, R. H. Hadfield, D. J. Foley, C. J. Brookes, H. I. Pinches, B. H. Butcher, H. F. Bellamy, H. B. McCaskie, R. F. Moore, J. Wright, M. Colt, J. C. Clayton, M. L. Hine, G. Rainford, J. H. Bankes, J. Finnegan, F. G. Hack, T. Whitehead, T. Coogan, G. L. Irwin, H. P. Aubrey, J. M. Anderson, H. E. H. Mitchell, A. P. Adams, I. M. Edis, H. S. Knight, R. E. Collins, C. M. Young, S. C. H. Bent, W. B. Thomson, A. C. Murray, F. E. L. Phillips, F. M. Gardner-Medwin, G. E. E. Nicholls, V. T. C. Bent, W. C. Swete-Evans, R. H. B. Oram, E. P. Dewar, G. Viner, J. P. P. Inglis, F. W. Stuart, W. Warnock, W. Gault, F. W. Perry, P. J. Carroll, O. R. Belcher, A. Reeves, W. A. Reynolds, W. T. Dobson, J. C. Scott, F. A. Juler, H. G. Brown, E. A. S. Shaw, F. M. P. Rice, F. Corner, A. S. Dawson, G. H. Baird, A. Jervis, J. Dulberg, R. Haslam, W. Craik, J. Lindsay, D. C. Druitt, H. Greenwood, A. G. Morris, J. W. Gill, R. M. Coalbank, W. E. Morgan, T. S. Forrest, S. Godding, A. D. Campbell, R. N. West, F. H. W. Brewer, R. A. Shekleton, C. A. Harrison, E. E. Lightwood, M. J. Horgan, W. C. Lattey, R. C. Smith, R. S. Woods, W. G. McConnell, A. J. Bado, E. H. Dendy, H. L. de Caux, A. H. Manfield, W. H. O'Heffernan, J. F. Powell, R. C. Macpherson, G. T. Symons, H. J. H. Symons, H. H. Castle, W. C. Lodwidge.

To be Temporary Captains: J. J. Boyd, P. D. Magowan, E. V. Frederick, A. D. Howard, F. C. Dobie, R. Warren, F. S. Kidd, G. M. de Vine, H. A. Gillespie, T. Campbell, Canadian A.M.C., J. D. Jones, Canadian A.M.C., M. Krolik, Canadian A.M.C.

To be temporary Lieutenants: H. D. Matthews, C. W. Freeman, E. D'A. McCrea, G. T. Drummond, I. Ridge-Jones, G. F. N. Taylor, W. L. Locke, H. W. Crowe, P. McFadyen, J. Muckart, J. R. C. Gordon, J. E. Measham, G. S. Hett, L. H. D. Thornton, N. Navarra, O. Barton, J. Magill, W. A. Dewhirst, D. G. Pearson, W. C. Fragoso, R. B. Johnston, G. M. Grundy, J. A. O'Regan, W. E. Peck, J. C. Auchencloss, A. Simpson, D. J. Smith, R. S. Harper, C. A. Hughes, J. Wyper, S. Southall, J. J. Bekenn, O. C. Gruner, S. Barron, S. G. Gordon, J. P. S. Dunn, J. Cullen, F. G. Sargeant, W. G. Masefield, A. W. Soper, P. K. Muspratt, P. Howe, W. H. Eggar, J. T. B. Hall, R. G. Meyer, A. M. M. Roberts, M. F. Huston, J. H. Dove, P. Liston, R. G. Ball, A. Vost, T. R. Wilshaw, R. S. Woods. Second Lieut. R. D. Passey (from Gordon Highlanders, Special Reserve), C. F. Beyers (S. African Medical Corps), J. T. McAuslin (S. African Medical Corps), G. R. Cowie (S. African Medical Corps).

W. A. Pride to be temporary Honorary Lieutenant while serving with Crookston War Hospital.

To be temporary Honorary Lieutenants: B. McB. Richardson, J. F. Cooper, E. A. Cayo, P. D. Spohn, A. H. Good.

Officers relinquishing their commissions:—Temp. Majors: R. S. Rodger (granted honorary rank of Major), J. McC. Martin, D.S.O. Temporary Captains: W. W. Patton, N. Tattersall, H. L. Dixon, W. Elwood, S. J. Staples, F. H. Alfrey, W. Russell, M.C., L. S. Shoosmith, G. Redpath, W. B. Honey, E. Sheffield, P. A. Sullivan, S. A. Kuny, G. P. Wilson, H. H. Scott, T. C. Reeves, C. G. Galpin (on account of ill-health), W. J. M. Marcy, R. W. Young, A. T. Bond, P. Verdon, C. A. Verge, V. D. Desrosiers, P. Quesnel, C. E. Tucker, A. W. Bretherton, R. J. Cane (on account of ill-health), A. Drouin, M. C. Bridgman (on account ill health), J. G. Dick (on account of ill-health), F. W. Campbell, J. F. Gill, L. Horsley, J. T. Murphy, A. C. Keay, M. Krolik, W. N. Child, W. G. Scott, C. A. E. Ring, D. J. Dauth, C. Kidd, W. Sansom, W. H. F. Godwin, T. J. W. Swinburne, W. S. Sprent, G. G. Lyttle, A. F. Millar, T. H. Pettit, A. H. Jacob, L. Lazarus, S. T. Lewis, R. K. Sutherland. Temporary Lieutenants: G. Dougan, A. E. Carver, W. H. Robinson, J. N. McTurk, A. E. Whitehead, G. M. Cameron, E. P. Duncan, A. H. Bloxsome, D. H. Hutchinson, H. G. Browning, S. J. Haylock, R. S. Park, A. G. Reid, M.C., E. Trotter, W. R. D. Daglish, J. W. O. van Millingen, J. V. Rees, T. Peebles, J. G. Jack, H. Blakemore, J. C. Ellis, P. S. Clarke, W. Dickey, H. P. Miles, L. Laurie, F. E. Wayte, B. B Appleby, E. Evans, A. H. Muir, D. J. Drake, A. S. Ransome, H. S Burns, A. R. Macdonald, V. P. G. Pedrick, A. J. S. Pinchin, J. E. Murray, C. Murray, M. M. Woods, W. R. Harris, W. McQuiban, J. J. Gilmore, P. C. V. Bent, W. T. Melling, D. I. Connolly, G. F. Page, T. Dunlop, M. C. Naylor, J. A. Ure, J. Maclean, J. J. Ryan, R. W. Davies, W. T. Warwick (on account of ill-health), G. W. Renton, L. E. Fannin (on account of ill-health), H. R. Marsh.

SPECIAL RESERVE OF OFFICERS.

Lieutenant on probation D. J. Steele is confirmed in his rank.

To be Lieutenants: N. H. S. Maelzer, Second Lieut. J. B. Kirk from Unattached List T.F., A. McL. Pickup, J. W. H. Grice, J. J. Conybeare, J. G. Allan, L. K. Ledger, O. C. Carter, H. B. Dodwell, W. U. Longford (from University of London O.T.C.), D. McEachran, J. C. Burns, S. L. Smith, J. O. P. Smith, L. Walker, J. McI. H. Smellie, R. Mailer, W. A. Weatherhead, C. B. B. Reid, J. S. Bond, D. W. McLean, R Andrew, J. H. R. Smith, J. F. Campbell, J. H. Brown, N. P. R. Galloway, W. W. Brown (from Edinburgh University Contingent, O.T.C.), B. W. Jones, A. Y. Milne (from Aberdeen University Contingent, O.T.C.), R. J. L. Fraser, T. Forrest, A. B. Austin (from Glasgow University Contingent, O.T.C.), A. B. McAulay Lang, F. W. Sandeman, D. S. Mitchell.

Capt. W. H. L. McCarthy, M.C., relinquishes the acting rank of Lieutenant-Colonel on reposting.

Second Lieut. H. B. Dykes, from Unattached List, T.F., to be Lieutenant.

TERRITORIAL FORCE.

Capt. G. R. Wilson to be Major.

Capt. C. P. C. Sargent, from T.F. Res., to be Captain.

Capt. R. E. Humphrey is seconded for duty with a General Hospital.

Lieut. E. R. Marle to be Captain.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers of the Territorial Force, R.A.M.C.: East Anglian Field Ambulance: Lieut.-Col. John Howard-Jones, Major Henry Waite (attached R.E. Signal Service), Major Duncan Gray Newton (attached York and Lanc. Regiment).

Medical News.

THE NATIONAL FOOD REFORM ASSOCIATION.—The executive committee of this association in April last passed a resolution "welcoming the action of the Ministry of Food in recommending communal kitchens, as making for individual and national economy and a better nourished population." The system has been widely adopted, and the committee claims that it has been generally recognised that it results in saving foodstuffs, fuel, and labour, diminishes waste, and affords opportunity for improving cookery. The committee has already been able to assist both public and private promoters of such kitchens in town and country, and offers to be of service to local authorities and others. Being wishful to secure as complete information as possible, the committee will be glad to receive particulars regarding any central kitchens. These should include (1) nature of management—i.e., local authority, society, or *ad hoc* committee (stating whether wage-earners are represented); (2) scope—i.e., whether for children, adults, or both; (3) days or hours open; (4) whether any meals are served on the premises; (5) section or sections of the community using same; (6) date of opening; (7) average number of meals served daily; (8) approximate population; (9) experience, training, and salary of manager and cook; (10) number of staff, including volunteers, if any; (11) menus for a fortnight, with tariff; (12) financial result—i.e., whether self-supporting, and, if not, how deficit met (stating if premises are rent free or at a nominal charge); (13) copies of any descriptive leaflets circulated; and (14) any general remarks or suggestions based on experience.

IN connexion with a child-welfare scheme, the Newry urban council have decided, subject to the consent of the Newry board of guardians, to open a maternity centre in the dispensary and to pay Dr. R. Flood £20 for his services in connexion with it.

THE LATE MR. DAVID CHRISTIE, L.R.C.P. EDIN.—Mr. D. Christie, who died recently at his residence, Carrigart, close to the famous Rosapenna golf links, co. Donegal, was one of the oldest medical practitioners in Ulster. For upwards of half a century he had been medical officer of Carrigart Dispensary District, and was a very well-known medical man in co. Donegal. His early professional life was passed as a surgeon in charge of emigrant sailing ships, and he had medical charge of the *Stradacona* and the *Minnehaha* during the years 1865 and 1866, these being the last of the sailing ships on which emigrants embarked for America from the port of Londonderry.

A MEDICAL ANTIQUARY.—Mr. Henry Laver, M.R.C.S., L.S.A., consulting surgeon to the Essex and Colchester Hospital, who died at his residence, Colchester, on August 31st, aged 87, was a well-known antiquary and an authority on architecture and local history. For over 50 years he practised medicine in Colchester, taking at the same time an active interest in all that concerned the welfare of the borough in which he lived. In 1885 he held the office of mayor. He was chairman of the Colne Fishery Board and of the borough and port health committee, curator of the Colchester Museum, an ex-president of the Essex Archæological Society, and the author of a work on the mammals of Essex.

A RED CROSS CONFERENCE.—A meeting is being held at Geneva, consisting of delegates of Red Cross Societies of Denmark, Spain, Holland, Norway, and Switzerland, to discuss means for the relief of prisoners of war in the belligerent countries.

PRESENTATION TO PROFESSOR HASLAM.—Mr. W. F. Haslam, F.R.C.S., professor of surgery in the University of Birmingham and surgeon to the Birmingham General Hospital, with which institution he has been connected for 36 years, was presented on Sept. 10th, on the occasion of his retirement, with an address and his portrait in oils to be hung on the walls of the hospital. At the same time Mrs. Haslam was presented with a diamond and pearl pendant.

HEALTH OF BELFAST.—A Belfast correspondent writes:—"It is satisfactory to record that between July 22nd and August 18th, as reported to the September meeting of Belfast city council, the average annual death-rate (11·4) and that from zymotic diseases (0·7) were lower than in the corresponding period of last year, and that the death rate from chest affections was only slightly higher (3·3 instead of 3·2)."

PORTSMOUTH INFECTIOUS DISEASES HOSPITAL.—An extension of this hospital was opened on Sept. 5th. It consists of two pavilions with 63 beds, an observation block, operating theatre, nurses' home, &c., which have been erected at a cost of £30,000. The observation block contains 20 beds, all in single wards, with glass partitions between each ward. This enables observation to be kept from a central room, and provides complete isolation of every case, so that there is no chance of cross-infection. There are now 264 beds in the hospital, being one bed per 1000 of the population, the provision which the Local Government Board requires.

THE ROYAL SANITARY INSTITUTE.—At the Town Hall, Chatham, on Sept. 29th, a meeting of the institute will be held when discussions will take place on Some Points in Epidemic Cerebro-spinal Meningitis, introduced by Surgeon A. G. L. Read, R.N.V.R., assistant medical officer, London County Council; on Some Aspects of the Housing Problem, introduced by Mr. J. Holroyde, medical officer of health for Chatham; and on Public Abattoirs, introduced by Mr. R. L. Honey, the assistant borough surveyor of Chatham. The chair will be taken at 10.30 A.M. by Lieutenant-Colonel H. R. Kenwood, R.A.M.C. After luncheon visits will be made to the Royal Naval Hospital, the Army abattoir and bakery, and Rochester Cathedral. Further particulars can be obtained from the honorary local secretary, Mr. J. Holroyde, Health Department, Town Hall, Chatham.

THE name of Dr. John Phillips, consulting obstetric physician to King's College Hospital, was inadvertently omitted from the list of the hospital staff in our last Students' Number.

THE DOMICILIARY SUPPLY OF DRUGS TO THE SICK POOR.—Lewisham guardians have been making inquiries as to the method adopted by the various metropolitan unions for supplying drugs to their outdoor sick poor. Replies were received from 22 unions, and from these it appeared that the district medical officers of Lewisham are the only officers in the metropolis having to provide a surgery and to supply drugs at their own expense. The salaries paid to district medical officers vary considerably throughout the metropolis, and are governed to a large extent by the number of orders received by the medical officers. No reliable statistics are obtainable in respect of any year after 1914. For that year the undermentioned is the rough average payment per order made to the district medical officers of the 22 unions or parishes which had supplied information: Camberwell, 2*s.*; Chelsea, 5*s.* 3*d.* (some drugs supplied through local chemists); Fulham, 2*s.* 1*d.*; Greenwich, 3*s.* 10*d.*; Hammersmith, 2*s.* 10*d.* (in one district (17 orders) £5 per annum allowed for drugs); Hampstead, 6*s.*; Holborn, 8*s.* 4*d.*; Islington, 2*s.* 5*d.*; Lambeth, 2*s.* 10*d.* (in five districts drugs are supplied under contract with local chemists); Lewisham, 2*s.* 6*d.* (drugs and surgery provided by medical officers); City of London, 15*s.* 2*d.*; Paddington, 3*s.* 3*d.*; Poplar, 2*s.* 5*d.* (additional £10 per annum allowed for drugs supplied after dispensary hours); Shoreditch, 2*s.* 6*d.*; Southwark, 4*s.* 6*d.*; St. George-in-the-East, 3*s.* 2*d.*; St. Marylebone, 3*s.* 11*d.*; Stepney, 3*s.*; Wandsworth, 2*s.* 11*d.* (in three districts salaries include cost of drugs); City of Westminster, 6*s.* 8*d.*; Woolwich, 3*s.* 9*d.* (in one district (80 orders) £12 10*s.* per annum allowed for drugs). It is estimated that each "order" entails an average of four "visits." The Bermondsey and Bethnal Green guardians have adopted the modern method of putting the medical relief of their respective districts under the direction of the infirmary medical superintendent and his assistants, and the Lambeth guardians have this system in force in four of their medical relief districts.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BEVAN, T. W., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer for the Nantyglo District, Monmouthshire.

KEATING, N., L.R.C.P., L.R.C.S. Irel., Assistant Superintendent to the Tuberculosis Prevention Scheme in Sheffield.

MEACHEN, GEORGE NORMAN, M.D. Lond., Superintendent of the Headingham and Black Notley Joint Sanatoria for Consumption in the county of Essex.

PATEY, WALTER, M.D., B.S. Lond., L.R.C.P. Lond., M.R.C.S., Acting Medical Officer for the Kingsteignton District by the Newton Abbot (Devon) Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

APPLECROSS PARISH COUNCIL.—Medical Officer and Public Vaccinator for the Torridon District. Salary £350 per annum, with house, &c.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £175 per annum, with board, &c.

BIRMINGHAM, LITTLE BROMWICH FEVER HOSPITAL.—Female Assistant Medical Officer. Salary £300 per annum, with board, &c.

BOLTON INFIRMARY.—Female Locum Tenens Assistant House Surgeon.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BRIXTON DISPENSARY, Water Lane, S.W.—Resident Medical Officer. Salary £200 per annum, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

DARTFORD, KENT, CITY OF LONDON MENTAL HOSPITAL.—Temporary Assistant Medical Officer. Salary £7 7s. per week, with board, &c.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, &c.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £150 per annum, with board, &c. Also Assistant House Surgeon. Salary £120 per annum, with board, &c.

GLAMORGAN COUNTY ASYLUM, Bridgend.—Temporary Assistant Medical Officer. Salary £6 6s. per week, with board, &c.

GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House Surgeon. Salary £150 per annum, with board, &c.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, Haverstock Hill, N.W.—Honorary Dental Surgeon.

HARROGATE INFIRMARY.—House Surgeon.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 40, Grove End-road, N.W.—Resident Officer. Salary £250 per annum, all found.

HULL, VICTORIA HOSPITAL FOR SICK CHILDREN.—House Surgeon.

KENSINGTON AND FULHAM GENERAL HOSPITAL, Earl's Court, S.W.—Resident Medical Officer.

LEEDS PUBLIC DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with board, &c.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Ophthalmic House Surgeon.

PORTSMOUTH, ROYAL PORTSMOUTH HOSPITAL.—House Surgeon for six months. Salary £250 per annum, with board, &c.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Anæsthetist once a week. Salary £20 per annum.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician for six months. Salary £100 per annum, with board, &c. Also Temporary Assistant Physicians for Monday afternoons and Saturday mornings. Salary at rate of £25 per annum, with lunch.

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—Two House Surgeons. Salary £120 per annum, with board, &c.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.—Female House Physician and House Surgeon for six months. Salaries at rate of £100 per annum each, with board, &c.

WEST BROMWICH DISTRICT HOSPITAL.—Senior House Surgeon, unmarried. Salary £160 per annum, with board, &c.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY.—Junior House Surgeon. Salary £200 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Long Eaton, Derby.

Births, Marriages, and Deaths.

BIRTHS.

ANDREWS.—On Sept. 2nd, at Corran Lochgilphead, Argyll, the wife of Dr. Alford Andrews, of a daughter.

FRYE.—On Sept. 4th, at Mount Park-road, Ealing, the wife of Captain Colin C. Frye, R.A.M.C., of a son.

SANDILANDS.—On Sept. 8th, at Campden-hill-gardens, W., the wife of John B. Sandilands, M.C., M.D., temporary Captain, R.A.M.C., of a son.

TYRRELL.—At 15, Sanderson-road, Newcastle-on-Tyne, on Sept. 7th, the wife of Captain E. J. Tyrrell, R.A.M.C., of a son.

MARRIAGES

BLACK—GRANT.—On Sept. 6th, at Tombal Church, Glenlivet, George G. McLean Black, M.A., M.B., C.M., to Lena, only daughter of the late Colonel George Smith Grant, Minmore, Glenlivet.

COLLINGWOOD—WILKINSON.—On Sept. 8th, at St. James's Church, Spanish-place, Captain B. J. Collingwood, R.A.M.C., to Grace Jane, only daughter of Mrs. C. W. Wilkinson, of Hampstead Way, N.W.

DUGGAN—GATTEY.—On August 21st, at St. Gregory's, Harpford, South Devon, Norman Duggan, M.B., F.R.C.S., Temporary Captain, R.A.M.C., to Mary Heath Gattey, late Q.A.I.M.N.S.R.

GRAHAM-HODGSON—JENKINS.—On Sept. 4th, at St. Peter's, Chertsey, Captain H. Kingston Graham-Hodgson, R.A.M.C., and Winifred Elizabeth, daughter of Mr. and Mrs. George Jenkins, of Burley Orchard, Chertsey, and Kensington-terrace, Newcastle.

HUTCHISON—MAHAFFY.—On Sept. 6th, at St. Matthew's Parish Church, Brixton, Cyril B. Hutchison, Captain, R.A.M.C., to Grace Paxton, only daughter of his honour Judge and Mrs. Mahaffy, of Bracebridge, Ontario, Canada.

DEATHS

THOMSON.—On Sept. 11th, at Monkchester, Bournemouth, John Roberts Thomson, M.D., F.R.C.P., L.R.C.S., aged 73.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, London.
Theophrastus and the Greek Physiological Psychology before Aristotle. By Professor G. M. Stratton. 8s. 6d. net.
The Economic Anti-Christ. By the Rev. W. Blissard, M.A. 6s. net.

BADGER, R. G., Boston. COPP CLARK, Toronto.
Philistine and Genius. By Boris Sidis, A.M., Ph.D., M.D. $1.00 net.

BLACKWOOD, WILLIAM, AND SONS, London and Edinburgh.
Besieged in Kut and After. By Major Charles H. Barber, I.M.S. 5s. net.

DEPARTMENT OF PATHOLOGY, COLLEGE OF PHYSICIANS AND SURGEONS, COLUMBIA UNIVERSITY, New York.
Reprints. Vol. XV. 1916.

GOVERNMENT PRINTING WORKS, Freetown, Sierra Leone, W.A.
Formulary of Certain Drugs Used in the Treatment of Tropical Disease. Compiled by T. F. G. Mayer, M.R.C.S. Eng., L.R.C.P. Lond., Senior Medical Officer, Sierra Leone.

IMPRIMERIES RÉUNIES, 8, Rue Rachais 8, Lyon.
Les Séquelles des Plaies de Guerre du Poumon (Manifestations Cliniques et Conduite à Tenir). Par le Dr. E. Malespine.

LAURIE, T. WERNER, London.
German East Africa. By A. F. Calvert, F.C.S. 6s. net.
Pan's Punishment. By Francis D. Grierson. 2s. 6d. net.
A Secret Service Woman. By Henry de Halsalle. 2s. net.
Women's Work in War Time: A Handbook of Employments. Compiled and edited by H. M. Usborne. With a Preface by Lord Northcliffe. 2s. net.

MALOINE, A., ET FILS, Paris.
Les Applications Thérapeutiques des Ions.

MASSON ET CIE, Paris.
Otites et Surdités de Guerre. Par les Dr. Bourgeois, Oto-rhino-laryngologiste des Hôpitaux de Paris; et Dr. Sourdille, Ancien Interne des Hôpitaux de Paris. 4 fr.
Le Paludisme Macédonien. Par P. Armand-Delille, P. Abrami, G. Paisseau, et Henri Lemaire. Préface du Pr. Laveran. 4 fr.
Exploration Radiologique des Voies Urinaires. Par le Dr. Arcelin, Chef de Service de Radiologie aux Hôpitaux de Lyon. 6 fr.
L'appareillage dans les Fractures de Guerre. Par Paul Alquier, Médecin Aide-Major, Ancien Interne des Hôpitaux de Paris; et J. Tanton, Médecin Principal, Professeur Agrégé du Val-de-Grâce. 7 fr. 50.

MENTAL CULTURE ENTERPRISE, THE, 329, High Holborn, W.C. 1.
The Ideal Nurse: An Address to Nurses delivered to the Nursing Staff of the Retreat at York at the Opening of the Winter Session, 1909. By Charles A. Mercier, M.D., F.R.C.P., F.R.C.S., &c., at that time Chairman of the Education Committee of the Medico-Psychological Association. 1s. 3d. net.

MURRAY, JOHN, London.
The Canteeners. By Agnes M. Dixon. 3s. 6d. net.

PUBLISHED FOR THE CIVIC FEDERATION OF NEW HAVEN ON THE ANNA M. R. LAUDER MEMORIAL FOUNDATION, YALE UNIVERSITY, BY THE YALE UNIVERSITY PRESS, New Haven, Conn., and New York City.
Health Survey of New Haven, Connecticut: A Report Presented to the Section on Sanitation. By C.-E. A. Winslow, James C. Greenway, and D. Greenberg, Yale School of Medicine. 75 cents net.

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, 66th-street, New York, U.S.A.
Studies from Rockefeller Institute for Medical Research. Reprints. Vol. XXVI.

UNIVERSITY OF CHICAGO PRESS.
The Biology of Twins (Mammals). By Horatio Hackett Newman. $1.25 net.

YALE UNIVERSITY PRESS (HUMPHREY MILFORD), London.
Organism and Environment: As Illustrated by the Physiology of Breathing. By John Scott Haldane, M.D., LL.D., F.R.S., Fellow of New College, Oxford University. (Silliman Memorial Lectures, delivered at Yale University.) 5s. 6d. net.

YEAR BOOK PRESS, London.
Girls' School Year Book (Public Schools): The Official Book of Reference of the Association of Head Mistresses, 1917.

Notes, Short Comments, and Answers to Correspondents.

THE CAUSATION OF SEX.

To the Editor of THE LANCET.

SIR,—Professor F. R. Lillie has just published a most interesting paper on "Sex-determination and Sex-differentiation in Mammals" (Proceedings of the National Academy of Sciences, U.S.A., July, 1917, p. 470). It deals largely with his researches on the question of the free-martin in cattle. With your permission I quote two passages: "We must regard sex as determined, in the usual sense of the word, at the time of union of the gametes. The question, however, arises whether sex-determination involves an irreversible tendency to the corresponding sex-differentiation, or whether such differentiation is more or less controllable, or even completely reversible?" Again, at the end of this paper, after discussing his own results, Lillie writes: "Nor can it be predicted in advance what the result of the inverse experiment might prove to be, i.e., treatment of the male zygote from the beginning of sex-differentiation with female hormones. Such experiments will be necessary for the full solution of the stated problem. We can, however, state confidently on the basis of the present results that sex-determination in mammals is not irreversible predestination, and that with known methods and principles of physiology we can investigate the possible range of reversibility."

I am, Sir, yours faithfully,

London, N.W., Sept. 1st, 1917. LEONARD J. KIDD.

AN EXCELLENT BABY BOOK.

WE have received from the Provincial Board of Health, Parliament Buildings, Toronto, a pamphlet of 34 pages, entitled "The Baby," and designed to teach the mother how to care for her infant and keep it well. The information is accurate and helpfully expressed, and in good taste. A novel laxative for the mother is given as: "Ordinary bran eaten raw, with wholesome cream, is often extremely beneficial." We congratulate the Ontario Health Board and Dr. J. W. S. McCullough, its chief officer, on what cannot fail to be a useful piece of propaganda against preventible infantile disease and mortality. The frontispiece reproduces the group "Motherhood" from the Victoria Memorial, London.

DOMESTIC MEDICINE AMONG SPIRIT-RAPPERS.

IT is a question whether the fashionable combination of spiritualism and sheer quackery, which prevailed some 50 years ago, has ever been paralleled, even in the age of Christian Science. Looking over old letters a correspondent has found the following message, received in October, 1872, by old ladies who at the time were regarded as very cultivated persons. They believed it to emanate from the spirit of their grandmother, a somewhat stern Low Church woman, a friend of John Wesley. Born in 1777, she abandons a century later the notably Johnsonian style of her still existing memoirs, and thus expresses herself:

"Send my message with loving haste to my suffering child. She will be comforted by my words. Tell her to take courage. She will need much care during the winter, but she must not be down-hearted. Such a very severe attack will leave her very subject to cold. She will derive much benefit from *Bryonia*, if she will only persevere. That with *Aconite* is invaluable. Send her a little book like yours, dear X., and then she will not be frightened. The simpler the directions the better. No complicated book will be of any use to her. Do you understand, dear X.? She might save herself and her children more serious illness by taking indisposition in time by these precious simple remedies. Do not delay sending her this relief for her cough. *She need have no compunction in taking these unknown to her doctor.* Have faith and confidence in these wonderful medicines. One drop in a tablespoonful of water every two hours is not bad for her. The usual dose is two or three drops in half a wine-glass of water at night or morning, but should the dose be repeated through the day do not take more than one drop at a time. For a cough take *Bryonia* and *Aconite* alternately. Tell Jane what a harmless and comforting thing syrrup of horehound is for softening the irritation caused by the cough. Farewell, dear ones."

The last touch, being orthodox, might well emanate from some spirit of old date. Horehound was a famous eighteenth century remedy. The cold which Jane suffered from was a violent form of influenza which visited Fifeshire in the autumn of 1872 after a long, cold, and wet Scotch summer. By Dr. Bell, a then well-known St. Andrews practitioner, it was very curiously attributed to an excess of "ozone in the air." He treated it with poultices and an effervescing mixture, but wisely sent his patients to bed. This particular patient suffered from abscesses in both ears. Old letters, from which the above notes have been taken, are often full of such quaint accounts of illness and self-medication, and even as lately as the latter half of the nineteenth century are often an epitome of superstition, even when written by highly cultivated people.

THE SUMMER TIME ACT.

THE Home Secretary gives notice that "summer time" will cease and normal time will be restored at 3 o'clock (summer time) in the morning of Monday next, Sept. 17th, when the clock will be put back to 2 A.M. Thus, the hour 2–3 A.M. "summer time" will be followed by the hour 2–3 A.M. "Greenwich time." It was on April 8th, 1917, that this year's period of summer time started in this country. In the year 1916 it commenced May 20th–21st and ended Sept. 30th–Oct. 1st. In 1917 it has thus started six weeks earlier and will end two weeks earlier than in 1916.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 12th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Sept. 6	....	104	72	59	59	60	Overcast
,, 7	0·15	89	69	60	58	61	Overcast
,, 8	....	104	75	57	57	59	Fine
,, 9	....	75	66	58	60	61	Showery
,, 10	0·04	90	69	60	60	62	Cloudy
,, 11	....	92	72	58	60	62	Overcast
,, 12	0·27	102	72	48	54	59	Fine

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—Journal of Laryngology, Rhinology, and Otology, American Journal of Roentgenology, Canadian Practitioner and Review, Archives of Internal Medicine, Archives Médicales Belges, M.D. (an American journal for medical defence), Homœopathic Recorder, Dublin Journal of Medical Science, Bristol Medico-Chirurgical Journal, American Journal of Orthopedic Surgery, Quarterly Journal of Microscopical Science, Annales de l'Institut Pasteur, Birmingham Medical Review, Bulletin of the Johns Hopkins Hospital, American Journal of Surgery, Edinburgh Medical Journal, Journal of State Medicine.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON W.C. 2.

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Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C. 2.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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Subscribers abroad are particularly requested to note the rates of subscriptions given above.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

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Books and Publications ... ...
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Every additional line, 6*d.*

Situations Wanted: First 30 words, 2*s.* 6*d.*

Per additional 8 words, 6*d.*

Quarter Page, £1 10*s.* Half a Page, £2 15*s.*

Entire Page, £5 5*s.*

Special terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Communications, Letters, &c., have been received from—

A.—Dr. H. de M. Alexander, Aberdeen; Anglo-American Pharmaceutical Co., Croydon; Dr. D. E. Anklesaria, Ahmedabad; Ancoats Hospital, Manchester, Sec. of; Messrs. Arnold and Sons, Lond.; Messrs. Allen and Hanburys, Lond.; Messrs. Adlard and Son and West Newman, Lond.

B.—Dr. C. H. Browning, Lond.; Dr. C. F. Bolduan, New York; Lieut. C. R. Brown; Dr. J. C. Bridge, Lond.; City of Birmingham, Public Health and Housing Dept.; Brisbane Hospital, Acting Manager of; Mr. B. Bysack, Khetri, India; Board of Agriculture and Flaheries, Lond.; Bethel Hospital, Norwich, Clerk to the; Borough Hospital, Birkenhead, Matron of; Messrs. Burroughs Wellcome and Co., Lond.; Birkenhead Guardians, Clerk to the; Birmingham Corporation, Medical Officer of Health of; Bolton Infirmary and Dispensary, Sec. of; Mrs. C. Brereton, Lond.; Miss C. M. Beeman, Lond.; Messrs. Butterworth and Co. Lond.; Messrs. W. H. Bailey and Son, Lond.; Capt. C. Banks, R.A.M.C.; Dr. L. T. Burra, Little Kemble; Dr. R. M. Buchanan, Glasgow; Messrs. C. Barker and Sons, Lond.; Mr. A. W. Bromley, Lond.

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D.—Messrs. Down Bros., Calcutta; Duff House, Banff, Sec. of; Messrs. A. Dodman and Co., Kings Lynn; Dr. K. Das, Calcutta; Mr. J. Dunlop, Lond.; Denver Chemical Co., Lond.; Derbyshire Royal Infirmary, Derby, Sec. of; Messrs. S. Deacon and Co., Lond.; Messrs. W. Dawson and Sons, Lond.; Dr. E. D. Downing, Colorado; Capt. W. W. Dickson; Messrs. De Haan and Zoon, Haarlem; Dr. R. Donaldson, Corstorphine; Duty and Discipline Movement, Lond.

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